

auto-call

Official Journal of the Foundation for Amateur Radio

MAY
1985



Dear Readers,

This will be my last issue, as Editor, of Auto-Call. My husband Randy (WB4MJF) and I have done Auto-Call together for almost five years. We both feel that it is for the best interest of the foundation that we resign at this time.

Thanks go out to all those who have supported us through this endeavor.

We look forward to receiving Auto-Call in the mail along with the rest of you.

If you are interested in bidding for the job of editing Auto-Call, please call Phil Russo, W3ELS, (301) 441-1946.

Phil "Pip" Sager, WB4FDT, will be the interim editor (please give him the support you have given me) His address is 1829 Stanley Place, Falls Church, Va 22043, phone (703) 734-2987.

73, Ann Kelly, KB4LRO



GAITHERSBURG HAMFEST
September 8, 1985

\$1.00



AUTO-CALL

Official Journal of the Foundation for Amateur Radio



Foundation President: Chris Imlay, N3AKD
First Vice President: Phil Russo, W3ELS
2nd Vice President: Glenn Tracy, KC3EK
3rd Vice President: Marc Pressman, N4DR

Recording Secretary: Nancy Draheim, NK4U
Corresponding Sec'y: Irene Akers, W3RXJ
Treasurer: James Green, WB3DJU
Information: Chris Imlay 601 Stirling Rd.
Silver Spring, MD 20901

MEMBER CLUBS

Alexandria Radio Club
Amateur Radio Research and Development Corp.
Anne Arundel Radio Club
Antietam Radio Association, Inc.
Arlington Amateur Radio Club
Baltimore Amateur Radio Club
Baltimore Radio Amateur Television Society
Bowie Amateur Radio Club
Capital City Amateur Radio Society
Capitol Hill Amateur Radio Society
Chaverim of the Greater Washington Area, Inc.
Columbia Amateur Radio Association
Department of State Amateur Radio Club
Frederick Amateur Radio Club
Friendship Amateur Radio Club
Goddard Amateur Radio Club
Green Mountain Repeater Association
Johns Hopkins University Applied Physics
Laboratory Amateur Radio Club
Laurel Amateur Radio Club
Maryland Emergency Phone Net
Maryland FM Association
Maryland Mobileers Amateur Radio Club
Metropolitan Communications Network Radio Club
Metrovision Amateur TV Club
Montgomery Amateur Radio Club
Mount Vernon Amateur Radio Club
National Capitol DX Association
Naval Research Laboratory Radio Club
Northern Virginia FM Association
Northern Virginia Radio Club
Ole Virginia Hams Amateur Radio Club
Patuxent Amateur Radio Communication Society
Pentagon Amateur Radio Club
Potomac Valley Radio Club
Prince George's Wireless Association, Inc.
Quarter Century Wireless Assn. - Baltimore Chapter
Quarter Century Wireless Assn. - Vic Clark Chapter
Quarter Century Wireless Assn. - Washington Chapter
Radio Amateur Satellite Corporation
Rock Creek Amateur Radio Association
Shenandoah Valley Amateur Radio Club
Southern Maryland Amateur Radio Club
Sterling Park Amateur Radio Club
Tri-County Repeater Association
T-MARC, The Middle Atlantic FM and Repeater Council
Vienna Wireless Society
Washington Adventist Amateur Radio Association
Washington Area Young Ladies' Amateur Radio Club
Washington Radio Club
Woodbridge Wireless, Inc.

FEATURES

FAR REPORT.....	4
NK4U	
FCC HIGHLIGHTS.....	5
W4GF	
PUBLIC SERVICE.....	6
W4NFA	
AUTO-CALL (AD RATES).....	20
SHACK SALES.....	25

CLUB COLUMNS

ANNE ARUNDEL RADIO CLUB.....	10
BALTIMORE RADIO AMATEUR TV SOCIETY.....	10
CHAVERIM.....	11
METROPOLITAN COMMUNICATIONS NETWORK RC...11	
PENTAGON AMATEUR RADIO CLUB.....	12
ROCK CREEK AMATEUR RADIO ASSOCIATION.....	12
VIENNA WIRELESS SOCIETY.....	12

Editor: Ann Kelly, KB4LRO
121 South Highland Street
Arlington, VA 22204
(703) 521-1877

AUTO-CALL magazine is published monthly as the official journal of the **Foundation for Amateur Radio, Inc.** Full permission is granted for quoting AUTO-CALL provided credit is given. Comments made by columnists do not necessarily reflect the opinions of the Foundation trustees. No effort is made to investigate advertisers, therefore no warranty can be implied. All contributions are appreciated but the editor reserves the right to reject, edit or delete portions of any copy.

AUTO-CALL has a circulation of 1400 copies, entered as third class non-profit matter at the post office at Arlington, VA. Subscription rates are \$6.00 a year. Deadline for all copy is 8th of the month. Subscriptions received by the 15th of the month will start with the following month's issue.

A MESSAGE ABOUT AUTO CALL:

As late as 1983 Auto Call magazine was costing our Foundation many thousands of dollars in subsidies.

Late 1983, a committee was formed to determine where monetary cuts could be made. The committee came up with a list of recommended changes which would not only cut the subsidies substantially but would also reorganize the Auto Call magazine operation.

First on the list was to change printers at a substantial savings. Following that, the committee recommended Auto Call be "cleaned up" that is, to eliminate "white spaces", raise the subscription rolls, raise the subscription rate, raise the advertising rates and last but not least, put the editor on a one year contract; editor to be determined by bid. All of this needed to be done in the order shown so as to keep an organizational continuity.

We were asked to implement the recommended actions. To date all of the changes except one have been implemented. We held off on changing editors because we found another possible way to save some money.

Our advertisers suggested we investigate the possibility of using newspaper print (#30wt) in lieu of the bond (#50)wt we were using. Well, we did. The savings was a major one. This information, as always, was reported to the FAR trustees. Their reaction was very positive.

To expedite the April and May issues we have permitted the change to the new printer. We hope to clean up the format in the June issue. Priorities are now changed and timeliness will be at the head of the list.

Phil "Pip" Sager WB4FDT will be our interim editor. Pip has been involved with "The Virginia Ham" for the last 17 years and has a good feel for what is involved in putting a magazine out.

When finished, we will have a magazine worthy of the Foundation for Amateur Radio. We promised a three year program and with some luck and a lot more effort we may be able to finish within one.

Thanks are in order to the many people who have helped in this past year. Notably our former editor Ann Kelly, our committee, the trustees, and above all our advertisers. It was the advertisers who made many of the suggestions we have strained to implement.

Thanks,
Phil, W3ELS

SUMMARY
BOARD OF TRUSTEES MEETING
APRIL 10, 1985

The meeting was called to order at 8:00 p.m. by President Chris Imlay, N3AKD. There were 21 Trustees present.

Following introductions, the minutes of the previous meeting were approved. Following a correction to change Washington Bible College to Columbia Union College as the place of the meeting.

Revised copies of the Constitution and Bylaws were distributed to those present.

Jim Green, WB3DJU, Treasurer, then presented the 1984 profit and loss statement and discussed the items therein. Following a lengthy presentation, he and his wife were congratulated and thanked to a "job well done". Following a discussion concerning a budget for calendar year 1984, it was decided that a budget would be developed by the Executive Committee and presented to the Trustees for approval at the next meeting.

A motion was made and seconded and carried that the Trustees establish, for the purposes of the 1985 elections, the positions of four Vice-Presidents. The following officers were then elected;

President	--	N3AKE	Chris Imlay
Vice-Presidents	--	W3ELS	Phil Russo
	--	KC3KD	Glenn Tracey
	--	N4DR	Marc Pressman
	--	N3CKD	Bob Moore
Recording Sec'y	--	NK4U	Nancy Draheim
Corres. Sec'y	--	W3RXJ	Irene Akers
Treasurer	--	WB3DJU	Jim Green

The order of the Vice-Presidents will be decided by the Executive Committee.

Flyers for the June 2 Manassas Hamfest were distributed.

A discussion was held on prizes for the workers at the Gaithersburg Hamfest and it was decided that individual tokens of appreciation or a lump sum to the workers club would be appropriate. The Hamfest Chairman will make a recommendation on the above.

Phil Russo, W3ELS, discussed the merits of printing Auto-Call on newspaper print. This would result in a great savings and would cancel the need to raise the cost of a subscription. He also announced that the March issue of Auto-Call would be mailed by the end of the week, and the April issue would be going to the printer next week.

It was announced that the next meeting would be held at Fairfax Hospital in the East Cafetorium which is accessed by the hospital's backdoor. Parking should be in the outpatient lot (or the employees lot if that lot is full). Talk-in will be on the 146.79 repeater. The meeting will commence at 8 p.m. All visitors are welcomed.

Respectfully submitted,

Nancy Draheim, NK4U Secretary

FCC Highlights

Bill Grenfell, W4GF



A FORMERLY AMATEUR-LICENSED PERSON WHOSE LICENSE WAS SUSPENDED OR REVOKED HAS FORFEITED THE RIGHT TO OPERATE AN AMATEUR STATION, according to the Chief of FCC's Private Radio Bureau. In a letter to a former licensee he stated: "Section 97.79(d) of the Amateur Rules allows a licensed amateur to 'participate' in amateur radio communication from his station." "This rule exists to allow persons who are not licensed Amateur Radio operators to experience the benefits of this service and to stimulate their interest in Amateur Radio. "Accordingly, it permits incidental communication by non-amateurs over amateur stations under certain very limited conditions. "You, on the other hand, were formerly a licensed amateur who forfeited the right to operate an amateur station. "Therefore you are not in the class of persons intended to be exposed to Amateur Radio by virtue of Section 97.79(d). "Hence you are prohibited from communication over Amateur Radio under any and all circumstances." (ARRL letter 3-14-85). Comments on the Docket, PR 85-51, were due at FCC, Washington, DC 20554, on May 14, with reply comments due June 17, 1985. See last month's Highlights for the text of the proposed amendment of rule Section 97.79(d) which would prohibit participation in Amateur radio communications by revoked or suspended former amateur licensees.

FCC IS WAITING "WITH BATED BREATH" FOR A PROPOSAL FROM ARRL TO PROVIDE "ASSISTANCE" TO FCC IN THE ISSUANCE OF AMATEUR STATION CALL SIGNS, was the response I received from an FCC official to my question about such a possibility. He also said that the Private Radio Bureau Chief, Robert S. Foosaner, has advised League officials that they would have to take over the entire process ("lock, stock and barrel" was the way my contact put it). I believe this means it is likely that receiving and processing a request, and issuing a desired amateur station call sign would have to be accomplished without any cost to the FCC. The Executive Committee of the ARRL Board of Directors recently voted to continue "the study of this issue".

FCC HAS PROPOSED TO INCREASE THE LEVEL OF LEAKAGE PERMITTED FROM CABLE TV SYSTEMS IN THE 54 - 216 MHz BAND FROM 20 to 50 MICROVOLTS PER METER (measured 3 meters from the leak). This would be accomplished by deleting present Cable Television Rule Sections 76.601, 76.605 and 76.609 and substituting a new Section 76.601 with the new limit(s). In the Notice of Proposed Rule Making, the Commission states that the relaxation is "...subject to the condition that actual cases of interference must be promptly and effectively eliminated, regardless of the leakage levels found in accordance with Section 76.613. 3/ "Accordingly, any interference complaint arising from normal usage must be resolved even if the signal leakage is below the level allowed by the table. "Comments are requested on the appropriateness of the proposed values." Comments were due by March 29 and reply comments by April 15, 1985. The ARRL comment opposed any relaxation of the leakage restrictions.

THE VOLUNTEER EXAMINATION STATISTICS FOR FEBRUARY 1985 ARE: Sessions 168; Locations 160; Passed 1873; Failed 1555; Elements administered 3428; Average pass rate 54.64%; Worst pass rate 25.00%; Best pass rate 80.00%

THE ENGINEER IN CHARGE (EIC) OF FCC'S ATLANTA, GA FIELD OFFICE ORDERED TWO SOUTHEASTERN AREA AMATEUR LICENSEES TO CEASE TWO METER BAND OPERATION BECAUSE OF INTERFERENCE TO CABLE TV RECEPTION (WESTLINK REPORT, 3-22-85). Arbitrary action and bypass by the EIC of all established procedures in the handling of interference complaints is alleged. It was reported that the order to the Gainsville, GA amateur has since been rescinded. The Greenville, SC amateur was put on quiet hours (1 hour of operation per day) after "...a new inspection of his station indicated that some direct, non-cable, transmitted-to-viewer RFI in the form of audio rectification still existed..." Earlier tests by an ARRL Technical Coordinator indicated that the cable was poorly shielded. (Westlink report, 3-22-85).

NO MENTION OF LICENSE FEES FOR OPERATOR LICENSES, AMATEURS, OR THE GENERAL MOBILE RADIO SERVICE IS IN BROADCASTING MAGAZINE'S REPORT OF FCC'S RECOMMENDATION TO CONGRESS THAT IT IMPOSE LICENSE FEES ON COMMERCIAL USERS OF RADIO. (ARRL, 3-12-85)

"THE FCC GETTYSBURG FIELD OFFICE HAS ADVISED LEAGUE STAFF THAT THE SUCCESSFUL COMPLETION CERTIFICATE ISSUED BY A VOLUNTEER EXAMINER TEAM IS NOT SUFFICIENT TO ENTITLE A PERSON TO TAKE THE NEXT HIGHER CLASS LICENSE EXAMINATION." "A letter from ARRL legal Counsel Chris Imlay, N4AKD, dated March 15, asks the FCC to clarify this situation." (ARRL Letter, 3-28-85). Both FCC Rule Sections 97.25(d) and 97.28(e) limit use of the Successful Completion Certificate to credit for the telegraphy examination elements 1(A), 1(B) or 1(C) only.

AT ITS MARCH 28 OPEN MEETING, FCC MADE PRELIMINARY FINDINGS THAT LIMITED FEDERAL PREEMPTION OVER SATELLITE RECEIVING ANTENNAS IS WARRANTED, AND THAT THERE SHOULD BE NO SIZE DISCRIMINATION FOR SUCH DISH ANTENNAS. FCC then adopted an appropriate Notice of Proposed Rule Making. "ARRL observers on the scene believe the Commission action is a good omen toward adoption of amateurs' own preemption matter, PRB-1, later this Spring." (ARRL letter, 3-28-85).

THE NEW ADVANCED CLASS AMATEUR OPERATOR LICENSE EXAMINATION QUESTIONS, ELEMENT 4A, WERE PUBLISHED IN THE MARCH 1985 PR BULLETIN 1035C AND RELEASED BY FCC IN MID-MARCH.

THE VOLUNTEER MONITORING ACTIVITY UNDER THE ARRL AMATEUR AUXILIARY TO THE FCC'S FIELD OPERATIONS BUREAU SENT A TOTAL OF 1038 ADVISORY NOTICES TO AMATEURS DURING THE INITIAL FOUR MONTH PERIOD OF ITS EXISTENCE BEGINNING SEPTEMBER 1, 1984. The statistics reveal that "chirp discrepancies are the most numerous, at 25% of all reports sent, followed by out-of band operation at 19%".

ARRL 1985 REPEATER DIRECTORY STATISTICS ARE: 9351 listings, up 14.3% from '84; 5931 on two meters, up from 5517 for '84; 1758 on 220 MHz, up 32.1%; maximum PER STATE is 927 repeaters in California, followed by FL, NY and TX (ARRL Letter, 3-28-85).

continued page 8



PUBLIC SERVICE REPORT

FCC Regulations 97.1: "The rules and regulations in this part are designed to provide an amateur radio service having a FUNDAMENTAL PURPOSE...SERVICE TO THE PUBLIC as a voluntary noncommercial communications service, particularly with respect to PROVIDING EMERGENCY COMMUNICATIONS."

Jeff Wilkes, W4NFA

--- D.C. ARES MEMBER OF TASK FORCE ---

The District of Columbia ARES is now a member of the Mayor's Special Event Task Force which meets twice a month to coordinate the many special events conducted in D.C. Ken Williams, N3AQG, EC for the District, is representing ARES at the meetings. The Task Force is made up of representatives from virtually all federal and city agencies, and public service related groups which could either be effected by or could be called upon to support special events in the District (Red Cross, City Police, Park Police, Federal Protective Services, Fire Department, Metro, REACT, etc.). Sponsors of events meet with the Task Force to discuss their needs and arrange for support by the groups represented. Currently sponsor's are not required to meet with the Task force in order to be given a permit, but if they want assistance from one or more of the member organizations they must appear at one of the Task Force meetings. The Task Force concept has worked so well for the District, that the D.C. Government is developing legislation which will require sponsors to meet with and be approved by the Task Force before a permit is granted for the event. The Task Force is now developing a handbook and other documentation which will be available to sponsors to assist them in planning an event and obtaining a permit.

--- THE SEASON IS UPON US ---

The arrival of spring once marks the beginning of the active local public service season. As you can see below, we are starting to get requests for amateur radio communications support, and soon the dribble will become a flood. Lets take advantage of the next few weeks to get ready for the heavy months ahead by getting our gear checked out and ready to go. Get those spare battery packs out that you haven't had any reason to use all winter and test them -- you may find that they no longer hold a charge. Checkout that boom mike preamp battery too, its probably dead. Take a look at those coax connectors, the one on that mag. mount that you store in the trunk of the car and the one on that 5/8 wave whip you keep to use on your HT may need some work. How about the connector and cable on that ear phone or external mike? Many public service minded hams have found that making up a public service kit that is handy and ready to go is very useful. A tool box or small suit case can be equipped with a selection of antennas, lengths of coax, one of each type of coax connector to connector adapter, external mike and ear phone for your HT, cigar lighter adapter for powering your HT, a power cord for your HT with clips which can be used when there is no cigar lighter, spare battery packs and charger, tape, a few tools, paper and pencil, rain gear etc. and kept readily available to grab along with the HT on the way to the operation. See you there!

--- HELP! ---

I need your help to keep Public Service Report going. If you like the idea of having this type of regular feature in AUTOCALL, please let me know about your public service activities. I need upcoming events to list in the Calendar by the end of the first week of the month before the month of the event. I need the basic information about your operation when its over to feature in the column. As a volunteer editor with a full-time job, kids in sports, and EC responsibility myself, I cannot dedicate the time necessary to be a reporter--going out and finding stories for Public Service Report. I can only be an editor, putting together the material you are kind enough to send to me. If you folks in Maryland wonder why I don't say much about activity outside No. Va., the explanation is simple--each month I get on the phone and call a few people (within local calling distance of my QTH) who have been able to provide material for the column in the past. Over the past two years I have called every EC in the area at least once (including calls requiring toll charges), but cannot afford (either the time or money) to call everyone monthly. After your next public service operation, take five or ten minutes to jot down a few facts about it and send it out to me by mail or radiogram, or give me a landline call. I've got an answering machine that you can leave a message on if no one can answer the phone and I will return your call, even if its a toll charge. All that I need to feature your operation in Public Service Report is: name of the event, identification of the sponsor of the event, date and time of the event, name and call sign of the ham who coordinated communications for the event, the names and call signs of all the hams participating, and any notable incidents or comments about the event. Don't worry about grammar, spelling, sentence structure, or any of that stuff-- all I need is a bare list of facts. The value of this column in the future is up to you readers out there. Let me hear from you: 9809 Meadow Dale Ct., Vienna, Va. 22180, 703-281-4249.

--- ACTION AT FAIRFAX CO. RED CROSS ---

Benn Kobb, KC5CW, new Asst. EC for the City of Fairfax reports lots of activity at the Fairfax Co. Chapter of the Red Cross, one of the primary agencies served by the Fairfax City ARES. The Chapter has requested Benn's assistance in establishing an operational communications network for the Chapter on the single frequency assigned to the Red Cross by the FCC (47 MHz.) Benn is currently surveying equipment and will soon be making recommendations to the Chapter on both numbers of mobile units and manufactureres. Benn will then act as a volunteer consultant during the installation and checkout of the gear. He will be helping them develop procedures for using their network. When that job is done, the Chapter wants assistance in designing a communications room for their

new QTH. In the next two years, the Chapter will have to relocate from the current Chapter house to a new building. Plans are just beginning so the location of the new Chapter house is not yet known. But where ever they move, W4PAY will be continue to be an integral part of their facility thanks to Benn and the Fairfax City ARES. If you would be interested in helping with these projects or if you are a ham who is also a dealer in land mobile equipment for 47 MHz., Benn would like to hear from you at 352-7943.

--- MS SOCIETY ASSISTS HAMS ---

For several years, amateur radio groups have provided communications for events sponsored by the National Capital Chapter of the National Multiple Sclerosis Society. For the past three years, ARES groups in Fairfax Co. and Prince William Co. with assistance from Maryland groups have provided communications for the MS 150 Bike Tour. In recognition of the contribution of amateur radio, the MS Society recently sent a letter to the FCC supporting PRB-1. The entire text of the letter reads: "The Multiple Sclerosis Society supports the Request for Issuance of Declaratory Ruling (PRB-1) filed by the American Radio Relay League Incorporated, requesting the Commission to exercise federal preemptive authority over state and local zoning regulations which affect amateur radio operator's transmitters and antennas. The Multiple Sclerosis Society relies on amateur radio operators for communications vital to insuring the safety of the participants in our annual 150 kilometer bike tour, and we are aware of other similar activities which also rely on amateur radio. We are concerned that inappropriate state and local zoning restrictions could interfere with the 'hams' ability to provide their important services. An example would be limitations to antenna heights for amateur radio repeaters which are critical to providing communications for activities like ours. The amateur radio operators should not be exempt from zoning regulations which clearly intend to protect the health and safety of citizenry, and it is our understanding that the American Radio Relay League is not requesting such an exemption. Their request and ours is that no actions be undertaken that will interfere with their ability to provide service to their fellow man. Sincerely, Jeanne K. Bradley Executive Director, National Capital Chapter, National Multiple Sclerosis Society."

--- ARRL REORG. AFFECTS PUBLIC SERVICE ---

The Americal Radio Relay League has recently reorganized to streamline the headquarters operation and to get more of the functions back into the field. As part of this reorganization, all administrative services which support the Field Organization and affiliated clubs have been combined into the new Field Service Department. Within the Field Service Department is found the Public Service Branch which is made up of the National Traffic System and the Amateur Radio Emergency Service. Mike Riley, KX1B, is responsible for the Branch and for the Public Service column in QST. Mike is the author of the new EC Handbook. Mary Davis is Mike's assistant. Mike is there at headquarters to assist us out in the field with our public service work, so let's take advantage of the resources he can make available to us. Call or write him at ARRL headquarters. This information is from Vol. 1, No. 1 of ARRL Field Forum, April 1985.

PUBLIC SERVICE CALENDAR

- 5-18-85 - 5-19-85: MS 150K Bike Tour; Jeff W4NFA 281-4249
 5-25-85 - 5-26-85: USA 100 Leesburg (needs a coordinator)
 6-1-85: Capital Motion Bike-a-thon; Ken N3AQG 363-4234
 6-?-85: Fairfax Fair; Marc WD4LWD 644-0166
 6-10-85: 2100 EDT; EC Net; 146.91/31
 7-4-85: Vienna 4th of July Fair - Amateur Radio Demonstration, Jeff Wilkes W4NFA 281-4249.

To have your event appear on the calendar, send date, time, place, and the name and telephone number for the amateur radio coordinator to 9809 Meadow Dale Ct., Vienns, Va. 22180.

NATIONAL CAPITAL AREA EMERGENCY AND TRAFFIC NETS

- | | | |
|--------------------------------|--|-----------------|
| 1300 EST Daily: | Virginia Traffic Net: | 7.26 SSB |
| 1800 EST Daily: | Maryland Emergency Phone Net: | 3.920SSB |
| 1800 EST Daily: | Virginia Sideband Net: | 3.947SSB |
| 1830 EST Daily: | Virginia Slow Net: | 3.68 CW |
| 1900 EST Daily: | Virginia Net (early): | 3.68 CW |
| 1915 EST Daily: | Shenandoah Valley Emergency Net: | 146.82/.22 FM |
| 2200 EST Daily: | Virginia Net (late): | 3.68 CW |
| 2215 EST Daily: | Virginia Late Net: | 3.947SSB |
| 1100/1500 Weekends | & Hollidays 4/1-11/15: Chesapeake Bay Weather & Traffic Net: | 147.705/.105 FM |
| 2000 EST Mondays: | Woodbridge Wireless Net: | 147.24/.84 FM |
| 2000 EST Tuesdays & Thursdays: | Arlington Co. ARES Net: | 146.82/.22 FM |
| 1930 EST Thursdays: | Vienna Wireless Society Emergency Net: | 146.685/.085 FM |
| 2000 EST Thursdays: | Alexandria Radio Club Net: | 147.315/.91FM |
| 2000 EST Thursdays: | Ole Virginia Hams Net: | 146.97/.37 FM |



July 27 thru Aug. 9, 1985

Our 26th year

TAKE A VACATION WITH A PURPOSE THIS YEAR

Join students from around the world at

OAK HILL ACADEMY

AMATEUR RADIO SESSION

Instructors CERTIFIED VE's

Over 25 years of successful teaching experience means upgrading is as easy as 1-2-3.

Your vacation is spent in the beautiful Blue Ridge Mountains of Virginia with expert instructors in friendly surroundings and with excellent accommodations.

Oak Hill also has a ham lab set up for all to use.

Courses offered are:

Novice to General

General or Tech to Advanced

Advanced to Extra

Learn — don't just memorize the answers to the exam questions.

C. L. PETERS, K4DNJ, Director
 Oak Hill Academy Amateur Radio Session
 Box 43
 Mouth of Wilson, VA 24363

Name _____ Call _____
 Address _____
 City/State/Zip _____

FCC Highlights

FCC'S PR DOCKET 85-21 PROPOSAL TO DELETE THE CURRENT 30 DAY WAIT REQUIRED BEFORE RE-TAKING AN EXAMINATION AFTER FAILURE WAS COUNTERED BY ARRL'S COMMENT WHICH REQUESTED A DIFFERENT APPROACH. The League asked the Commission "...to require a 27 day waiting period after failure, and to require advance public notice of every examination opportunity in the interest of preserving the integrity of the VE program." (ARRL Letter, 03/85). In addition to leaving the waiting period to the discretion of the VEC, FCC proposed to require public notice of examination opportunities only for those sessions which would serve five or more applicants.

A 45 DAY EXTENSION OF TIME FOR COMMENT ON FCC'S PR DOCKET 85-22 NOTICE OF PROPOSED RULE MAKING (NPRM) REGARDING RESOLUTION OF INTERFERENCE BETWEEN REPEATERS HAS BEEN REQUESTED BY THE ARRL. The NPRM proposes to require resolution procedures, such as: "Where one repeater is coordinated and the other is not the station with the non-coordinated repeater has primary responsibility to resolve the interference." See last month's HIGHLIGHTS for more details. The NPRM specified July 1, for original and September 30, 1985 for reply comment limits. An FCC official advised me that the League's request would likely be granted (probably move the original comment deadline to August 15, etc.).

THE PR DOCKET 85-23 NPRM TO IMPLEMENT WARC '79 AMATEUR ALLOCATIONS HAS RECEIVED A MIXTURE OF APPROVAL AND OBJECTION FROM THE ARRL. In its March 23 meeting, the League Executive Committee voted to file comments urging the Commission to implement the planned allocations as soon as possible, but to continue its "...opposition to footnotes placed against the 10 and 24 GHz bands and against the 220 MHz band which would reduce the status of the Amateur Service relative to other services in the band." The comment periods ended March 11 for original and March 26, 1985 for reply comments.

PROGRESS TOWARD ACHIEVEMENT OF THE APPROPRIATE ALLOCATION OF THE 10, 18, 24 AND 902 MHz BANDS TO THE AMATEUR RADIO SERVICE IN THE PR DOCKET 84-960 PROCEEDING HAS BEEN DELAYED AS A RESULT OF AN FCC ACTION GRANTING A REQUEST FOR AN EXTENSION OF THE REPLY COMMENT PERIOD (from January 16 to March 12, 1985). I understand that the work on this Docket is to be divided into two different parts, with the intent to move forward first on the part that is not controversial. However, it is likely to be several months before this first part is final.

EXCERPTS FROM THE HEARINGS BEFORE THE COMMUNICATIONS SUBCOMMITTEE OF THE COMMITTEE ON SCIENCE, TECHNOLOGY, AND SPACE OF THE UNITED STATES SENATE, (3-20-85) REGARDING CABLE TV LEAKAGE AND SENATE BILL 66 FOLLOW: (Senator Barry Goldwater, K7UGA, chairman of the Subcommittee is questioning Mark Fowler, Chairman of the Federal Communications Commission) "Am I correct in believing that no change is proposed to the second half of the present governing scheme; that is, regardless of whether any leakage is above or below the minimum standards, the cable operator is in all cases responsible for eliminating any interference to communications caused by the leakage?" "Mr. Fowler: Yes, Chairman Goldwater, that is correct. The cable operator may not interfere, and that is a black letter rule."... "Senator Goldwater: I hope you enforce that." "Mr. Fowler: We are. But we also need your Senate bill 66, which would give us a little more enforcement power than we have now by providing criminal penalties. So we support Senate bill 66 very strongly."... (Mr. Fowler)...As I mentioned, we really need something to permit us to get these people into Federal district court and to have the threat of criminal as well as civil penalties visited on people who willfully interfere. "Now we only have administrative sanctions. We can revoke their license, or we can fine them. But a criminal penalty, Senator, I think is just exactly what we need."

THE FIELD OPERATIONS BUREAU (FOB) OF THE FCC HAD TAKEN POWER MEASUREMENTS AT 172 AMATEUR STATIONS DURING A PROGRAM PHASE ENDING FEBRUARY 25. "Objectives were to discover whether amateurs can reduce power; what levels most amateurs use; what effects a 50% reduction in power has on a QSO in progress; and whether there is a general awareness and compliance with Section 97.62(a) of the Amateur Rules which mandates use of the minimum power necessary for the communications in progress. When asked, (by ARRL) "the FOB official was not sure exactly what the data will be used for" but "believed the results of the study would be available in early summer." (ARRL letter, 3-14-85).

ON MARCY 27, FCC RECEIVED A PETITION FROM GORDON WEST, WB6NOA, "TO ALLOW AMATEUR RADIO OPERATORS WHO POSSESS MARINE SINGLE SIDEBAND PART 83 TYPE-ACCEPTED EQUIPMENT TO OPERATE THIS SAME EQUIPMENT ON AMATEUR RADIO FREQUENCIES AS AUTHORIZED BY CLASS OF AMATEUR RADIO LICENSE HELD." "This would increase the chances for a licensed amateur radio operator to signal a Mayday on any maritime mobile or amateur radio frequency with the same transceiver. This would also discourage the widespread use of non-type-accepted amateur radio equipment on maritime single sideband frequencies."

ON MARCH 29, 1985, FCC RELEASED AN ORDER (SUBJECT TO APPEAL) REVOKING AND SUSPENDING THE AMATEUR STATION AND OPERATOR LICENSES OF JAMES W. SMITH, W6VCE, OF EL CAJON, CA, FOR CAUSING WILLFULL AND MALICIOUS INTERFERENCE TO RADIO COMMUNICATIONS, IN VIOLATION OF SECTION 97.125 OF THE AMATEUR RADIO SERVICE RULES. The Order stated that he "...at the same time, violated Sections 97.113, 97.115, 97.84(a) and 97.123.: These Rule Sections are titled: 97.84 Station identification; 97.113 Broadcasting prohibited; 97.115 Music prohibited; 97.123 Unidentified communications. Apparently the violations have taken place starting at least in February 1984 in the course of a feud between Smith and a group of repeater users carried on in the amateur two meter band. The Commission's document uses 23 pages to describe the history of, and procedures involved in this case!

THE FCC HAS DISMISSED A PETITION TO INCORPORATE THE ARRL TWO-METER BAND PLAN IN THE AMATEUR RADIO SERVICE RULES. It indicated belief that voluntary plans are preferable to rigid regulations and that operation in nonconformity was not harmful enough to require Commission action.

THE FCC HAS SHOWN INTEREST IN AN ARRL FILTER PROJECT AND WOULD LIKE IT TO PUBLISH A LIST SHOWING THE RELATIVE EFFECTIVENESS OF VARIOUS FILTERS IN THE CONSUMER MARKETPLACE. "In turn, the Commission could furnish copies of our list to consumer having TVI, with some assurance the complainant would buy one which really works. "Neither price nor manufacturer's name has much to do with effectiveness. "For instance, one widespread chain of stores sells three TVI filters; one works, the other two do not!" One \$2.50 filter "...works much better than some costing eight or ten times as much." (ARRL, 2-20-85).

FCC AMATEUR OPERATOR AND STATION LICENSE TOTALS AS OF FEBRUARY 28 WERE: Extra Class, 36,303; Advanced, 97,518; General, 116,874; Technician, 80,658; Novice, 79,497; Total Operators, 410,850; Club Stations, 2302; Military Recreation, 175; Secondary Stations, 399; Total Stations, 413,726.

Gf .



LOOK WHAT YOU ARE MISSING!



**Your ARRL/CRRL membership
buys ALL THESE SERVICES
AND MORE. ACT NOW!**

MEMBERSHIP APPLICATION

Name _____ Call _____

Street _____

City _____ Prov./State _____ PC/Zip _____

\$25 in U.S./\$30 in Canada/\$33 elsewhere (U.S. funds)
Licensed amateurs, age 17 or under or age 65 or over, upon submitting proof of age, may request the special dues rate of \$20 in the U.S. (\$25 in Canada, \$28 elsewhere, in U.S. funds)

For postal purposes, fifty percent of dues is allocated to QST, the balance for membership.

VISA or ChargeX No. _____ Expires _____

Master Card No. _____ Bank No. _____ Expires _____

The American Radio Relay League
225 Main St. Newington, CT. 06111 USA

Do you remember your first QSO?

Mike Peterson sure does! His exciting first contact was the beginning of a new world for him — a world without restrictions — a world supported by the Courage HANDI-HAM System.

The Courage HANDI-HAM System is an organized group of disabled and able-bodied licensed hams, who help individuals with physical handicaps become involved with Amateur Radio.

As a HANDI-HAM member, Mike's travel adventures have not been limited by his wheelchair. If you'd like to help HANDI-HAM students travel the airways and discover the thrill of making the first QSO, contact the address below.

Ⓢ COURAGE HANDI-HAM® SYSTEM Ⓢ
Courage Center, 3915 Golden Valley Road
Golden Valley, Minnesota 55422 WAØQWE



WIDOW'S ASSISTANCE PROGRAM

Hams are well known for their various volunteer public service efforts. Volunteer effort and aid to the less fortunate is part of the amateur creed. One type of public service is rarely mentioned but is very important. This is the service that some groups and individuals provide to the families of Silent Keys in disposing of their equipment.

Many times the family has no idea of the value of the amateur radio equipment in their possession. Other times, they may have an inflated opinion of the real value. Unfortunately, families also run the risk of encountering some unscrupulous individuals or companies that will purchase the equipment for a fraction of its true value. The story of the widow who got \$50. for a 1980 vintage HF transceiver are legion.

For a number of years, the Foundation for Amateur Radio has run a service called the Widow's Assistance Program. It's record of high integrity and visible success has been due in large part to Bill Parrot W4URL. Almost singlehandedly, Bill has administered this program, and over the years has aided a large number of families to obtain fair prices for their Amateur Radio equipment. A number of items must be considered before such a program can be undertaken. Prior planning and proper selection of volunteers is crucial to success.

1) Personnel: People working for The Widow's Assistance Program must like dealing with people and should be fully volunteer. In no case, should a conflict of interest occur between an individual and the interest of the Program. (i.e. no personnel should also sell used gear from this project for a commission or profit)

2) Initial contact: Initial contact should be made by the Widow, not by the assistance program. Some widows may not want to sell their amateur gear, others may not wish to address the problem at the time. Other hams could however inform the widow of the existence of the Widow's Assistance Program and provide a telephone number, etc.

3) All pick-up of equipment, and payments to Widows should be handled by one person. This will assure continuity of care and reduce possible communications problems. Repairs, sales, shipping, etc. can be handled by other members of the team. All items should be labeled at time of pick-up with the call-sign of the deceased, and a list provided to the Widow.

4) At the time of pick up, one is often requested to give an appraisal of the value of the equipment. Some widows will require this for tax purposes. If for tax purposes, the estimate should be deliberately conservative. Widows should be asked about ultimate disposal of unsalable gear (donation to charity, landfill, returned, etc.)

5) Many clubs and groups merely sell the equipment on a "As-Is" basis with no effort to assess the degree of function of the unit. In no case should any guarantee or warranty, express or implied be given. However, the value of the equipment is enhanced if an adequate assessment can be made to the buyer at the time of sale. This will enhance prices and reduce complaints and possible future problems. If adequate volunteer technical ability is available, repairs can be undertaken. However, the cost of all repairs must be weighed against the ultimate price of the equipment. Small repair part costs can be charged against a special fund, with large part costs being charged against the proceeds to be returned to the widow. Common sense should be the guide in these matters.

6) Accountability: Integrity of the program must be guaranteed at all times. The club or organizations treasurer should check the books at least periodically to assure that the Widows are receiving the proceeds in a timely fashion. A separate checking account must be set up for this purpose, and accurate logging of all equipment received, money received and money returned to widows must be kept. Some groups may choose to re-imburse the volunteers for travel, shipping expenses, and costs of Hamfest attendance, and possibly the cost of small repair parts.

7) If large quantities of equipment are moving through the program, equipment insurance may be appropriate. If you do not have such insurance, a fire or theft could be devastating.

All in all, running a Widow's Assistance Program can be rewarding for all concerned. The widow benefits by having a disposal problem solved, the volunteers benefit by enjoying the repair and technical work and derive satisfaction from helping others. The ham community benefits, as it is again credited with another important public service.

Marc Pressman N4DR



Anne Arundel Radio Club

MEETINGS: 8PM 1ST AND 3RD THURSDAYS, DAVIDSONVILLE FAMILY RECREATION CENTER, QUEEN ANNE BRIDGE AND WAYSON
ROADS OFF MD. RT. 214 NEAR ANNAPOLIS.
ON THE AIR: 2030 THURSDAYS WHEN THERE IS NO CLUB MEETING (2100DST) ON 147.705/105. TUESDAYS AT 2030
ON 28.710 (2100 DST). THE CHESAPEAKE BAY WEATHER & TRAFFIC NET ON 147.705/105 AT 1100 AND
1500 EVERY WEEKEND DAY AND PUBLIC HOLIDAY FROM APRIL 1 TO NOVEMBER 15.
ADDRESS: PO BOX 308, DAVIDSONVILLE, MD. 21035
INFORMATION: MARGARET (HOLLY) BEVAN 301-987-4687

About a dozen Club members reported to the Roedown Estate in Davidsonville on Easter Sunday morning to handle communications for the annual Marlborough Hunt Club Races. The day started with beautiful weather, but deteriorated to a soggy mess by the finish of the last race and the time to dismantle the equipment.

The Club Rabbit Hunt on March 24th was won by Alex Haynes, WB3HXY. He pinpointed the rabbit from his home station and drove straight to it. Now Alex must think of a good hiding place for the next hunt.

Five graduates of the MSN (Maryland Slow Net) have gone on to MDD as liaisons on a regular basis. They have received an excellent report card from a state official of the national traffic system, who observed that the MSN is doing a super job of training, because the graduates are really up on procedures and protocol. This should make Bill, KC3AV, and Buck, KC3Y, very proud.

Glenn Zimmerman, KA3ESE, Coordinator of the Chesapeake Bay Weather and Traffic Net, conducted the first net of the season on the morning of Saturday April 6. As expected, few sailors set sail on that windy day.

Chad, formerly KA3JYK, now answers to the call N3EHB.

Holly, N3BMB



Baltimore Radio Amateur Television Society

REPEATERS: 2 METERS: 147.63/147.03; 146.025/146.625; 10 METER FM; 29.54 in/29.64 out ATV: 439.25 in/
426.25 out, ATV
MEETINGS: 3RD THURSDAY, 7:30 PM (REGULAR MEETING) AT MARYLAND SCIENCE CENTER, LIGHT STREET AT KEY KWAY,
NEAR HARBORPLACE, BALTIMORE 1ST SATURDAY, 3 PM (BOARD/BUSINESS MEETING) AT HOWARD JOHNSON'S
BELTWAY 695 AT REISTERSTOWN RD. (EXIT 20) PIKESVILLE.
INFORMATION/APPLICATIONS: PO BOX 5915; BALTIMORE, MD. 21208

The BRATS continue plans for the famous BRATS Maryland Hamfest and computerfest, to be held July 28th at the Howard County Fairgrounds—the oldest and largest of the 3 hamfests held at Howard County each year. This year, as in the past, we have invited several guests and hope they will be able to make it. The great guys from C-CARS, the new third call area QSL bureau will, hopefully, be there. We also hope that Alan, K2EEK and Dick, K2MGA, Editor and Publisher of CQ Magazine will be able to make it. As of this early date, about 25% of our indoor table space is already sold out! We look forward to having you join us on July 28th.

The BRATS club station at The Maryland Science Center is in the process of moving down to the first floor. Guest operators will be given red jackets and badges. We are in the process of completely revamping the station and the gear. We look forward to having you visit with us at The Maryland Science Center when all renovations are completed. The BRATS have free VE exams (under the Laurel VEC) for May 19th and June 16th at 11:00AM at the Science Center. Talk-in is on 147.03(+600). There will also be free VE Exams at the BRATS Maryland Hamfest on July 28th at 11:00 AM. No advanced reservations required for testing and there are no fees. All exams are free. Upgrade!

73, Mayer, W3GXX

Washington Adventist Amateur Radio Association

MEETING TIME: LAST SUNDAY OF EVERY MONTH, 4PM
MEETING PLACE: SLIGO 7th-DAY ADVENTIST

Chaverim of the Greater Washington Area, Inc.



MEETINGS: THE FIRST SUNDAY OF EVEN NUMBERED MONTHS, AT 7:30 PM, AT THE JEWISH COMMUNITY CENTER OF GREATER WASHINGTON, 6125 MONTROSE RD, ROCKVILLE, MD.
ON THE AIR: THE FIRST SUNDAY OF ODD NUMBERED MONTHS, ON THE ROCK CREEK REPEATER, 7:30 PM, 145.25 MHz RECEIVE, 144.65 MHz TRANSMIT.

Our membership has passed the one hundred mark, making us one of the largest Chaverim chapters in the U.S.

We are attempting to organize a Novice Class to begin in June. This will permit college as well as high school students to participate. We will be publicizing the course and will ask for your support in finding prospective participants. Speaking of publicity, Jim Weitzman gave a talk and demonstration on ham radio to a group of 13 year olds at the Har Shalom Sunday School. Twelve students indicated that they were interested in signing up for a novice class.

73, Marv WG4Q

Metropolitan Communications Network Radio Club

MEETINGS: QUARTERLY, ON THE SECOND SUNDAY OF THE MONTH: PLACE TO BE ANNOUNCED.
REPEATER: WB3DBU/R 52.250 Mhz in: 53.250 Mhz out. ACCESSIBLE ON 147.555 Mhz IN THE SIMPLEX MODE.
ON THE AIR: SATURDAYS AT 1900 HOURS.
MAILING: c/o BOB SPORN, WA3GGG, 9927 COTTRELL TERR. SILVER SPRING, MD. 20903
INFORMATION: BOB SPORN, WA3GGG, 434-1719

The club welcomes the New members; C. Bryan Green, Jr., W3CQE and Edward J. Presley, KA3KBZ. The Technical Committee reported that a remote site will be set up in Maryland soon to broaden the repeater's range. An amendment to the club's constitution will be voted upon at the June 1985 meeting, covering absentee ballots, in the election of club officers.

THE SUNDAY MORNING COFFEE NET (6 METERS AM) ON 50.4 MHZ; SUNDAYS AT 0900 HOURS.

Check-ins run about the same, and Duane (WA3PGA) net control, is looking for someone to assume this interesting position. If you have any qualms about it, how about trying it out for a week or two? It is really a stimulating experience.

MARYLAND SIX METER FREE STATE SIDEBAND NET: SUNDAYS AT 1900 HOURS ON 50.125 MHZ.

Among our new check-ins, is Alex D. Fraser of Baltimore, N3DER. Our flourishing net usually ends by 2000 hours because some of our check-ins have an ATV net to join.

While in Florida recently, noticed an Ontario car in the motel's parking lot. Its owner introduced himself to me at the breakfast table as VE3KU a ham for 51 years!

73, Bob WA3GGG

Department of State Amateur Radio Club

MEETINGS: FIRST MONDAY OF EACH MONTH AT 12 NOON AT MAIN STATE BLDG, 3rd FLOOR, ROOM 3524.
FOREIGN SERVICE NET: EVERY SUNDAY, 1500-1530Z ON 14316, 1530-1600Z ON 21416, AND 1600-1630Z ON 28616.
REPEATER W3DOS/R: 145.19 OUT, OPEN ACCESS, ROUND TABLE THURSDAY NIGHTS AT 8:30PM



Baltimore Amateur Radio Club

MEETINGS: FIRST AND THIRD WEDNESDAY OF THE MONTH AT THE RANDALLSTOWN LIBRARY, LIBERTY AND OLD COURT ROADS, 7:30 PM.
REPEATERS: 146.07/146.67 146.34/146.94 222.64/224.24 44.325/449.325

Washington Area Young Ladies' Amateur Radio Club

Vienna Wireless Society

EMERGENCY NET MEETS EVERY THURSDAY AT 7:30 P.M. ON CLUB REPEATER K4HTA, 146.085/146.685.

ANNUAL DINNER - The VWS Annual Dinner March 22, at the Westwood Country Club was a great success despite a rainy night. Among the 109 attending were both the mayor and police chief of Vienna.

Art Van Wagenen, N4JMJ, won the top door prize, a 2-meter HT. Other prizes included a Watt meter, a mike equalizer, a storm alarm and three \$50 certificates for XYLS and YLS only.

Adrian Heinrich, VK3XIN, who soon will be returning to Australia with his family, was given a life membership in VWS and received a plaque honoring his contributions to the VWS Emergency Net. Club President Barbara Holland, N4HPY, made the presentations, telling Adrian and his family they will be missed and to start thinking about DX contacts from 'down under' to Virginia.

LOOKING AHEAD - UPGRADE EXAMS will be given by VWS beginning at 9 am., Sat. May 11. Nancy Draheim, NK4U, will accept 610 forms until May 8. Her address is 3513 Old Post Road, Fairfax, Va. 22030.

VOLUNTEERS are needed at press time as Jeff Wilkes, W4NFA assembles the annual Bikethon communications Team. This year the charitable event rolls all the way to Harpers Ferry, W.Va., May 18, with participants returning to Washington's Union Station May 19, aboard an Amtrak special train featuring a champagne brunch. The bubbly is for the two-wheeler crowd, not the hardy 2-meter communications brigade. They'll get whatever satisfaction they can from a roadside donut stand.

FIELD DAY is June 23. VWS will string its dipoles and hoist its beams and verticals once again at Burke Lake Park. Bob Lipp, K4MJO is in charge. Visitors and the curious are welcome.

- 73 -

Pentagon Amateur Radio Club

ADDRESS: AF/DAZ, ROOM 5E 376, PENTAGON, WASHINGTON, D.C. 20330

Election of new officers: Frank Hartnett K8PUU; President, Neal Berry KI4RI; 1st Vice President, David Hammond WC4B; 2nd Vice President, James Brown KB4JKX; Secretary, Wm. Stanfill K4YCD; Treasurer.

PARC is looking for volunteers to fill committee slots.

PARC Field Day will be held at Quantico, Virginia. K4AF will operate a special events station on 20 Meters and 40 Meters for Armed Forces Day Phone and CW portions of the General Class.

Rock Creek Amateur Radio Association



2 METER NETS: AM 145.20 TUESDAYS 8:35 PM FM 144.65/145.25 MONDAYS 8:00PM

RCARA ALUMNI NET: 7.23 MHz MONDAYS 11:00 AM

RCARA LUNCHEON: WEDNESDAYS, 12 NOON, ANCHOR INN, WHEATON, MD.

MEETING: 8PM THE THIRD FRIDAY OF EACH MONTH AT VITRO LABORATORIES BUILDING 4, 13900 CONNECTICUT AVE.

Officers for the coming year were elected at our March meeting and installed in Office at our April meeting. Congratulations to the following: President Carl Brandt N3CFA, Senior Vice President John Muller W3QF, Junior Vice President Victor Link N3DWQ, Secretary Eric Meyer N3DYQ, Treasurer Ken Williams WB3ELV, and Trustee-At-Large Walt Hardy KF3H.

Trustees to the Foundation for Amateur Radio are Ed Morrison W3RY and Nick Smith W3FNU. The Executive Committee was reelected and they are: Jim McDonough W3CY, Phil Hoey N3API, Ralph Mullendore K3CWX, and Walt Ramsey AK3B. Repeater Trustee is Granny Klink W3AFV and his committee members are: John Muller W3QF, Eric Meyer N3DYQ, Bernie Pettit WB9BZL, and Mike Williams KB3NB.

Walt Hardy KF3H in the twilight minutes of his Presidency issued Certificates of recognition for outstanding contribution to Amateur Radio to the following: Phil Hoey N3API for his work on the Club's Constitution and Directory, John Muller W3QF for his work in keeping the 25 machine on the air, and Walt Ramsey for his public relations work. A vote of thanks and a hearty "well done" was expressed to the outgoing officers.

Welcome to the club was extended to new members Robert Ohlbaum W3GVH and Ari Pieniek WB3KTF. Recent upgrades are John Ingram KA3LIE to TECH, Marc de Moya N3EFY to GENERAL, John Kochowicz N3CBR, Eric Meyer, N3DYQ, Boyd Nelson KC3PP to ADVANCE, and Pierre Portmann W3RXG to EXTRA.

73, Walt AK3B

QUESTIONS FOR THE ELEMENT 3 AMATEUR RADIO OPERATOR EXAMINATION

The questions used in an Element 3 written examination must be taken from the following list. CANDIDATES SHOULD NOT TRY TO MEMORIZE THESE QUESTIONS. The examination is a test of the knowledge a person needs in order to operate an amateur radio station properly. It is not a test of a person's ability to answer questions by rote. See PR Bulletin 1035, Study Guide For FCC Amateur Radio Operator License Examinations for more information.

The questions must be used exactly as stated in this Bulletin. The Volunteer-Examiner Coordinators use their discretion as to the form of the examination answers: essay, single-answer, fill-in-the-blank, multiple-choice, true-false, etc. See Section 97.27 of the Commission's Rules.

Direct any inquiries concerning these questions to the Volunteer-Examiner Coordinator. Do not contact the FCC.

SUBELEMENT 3A - Rules and Regulations (9 questions)

- 3A-1.1 What is the control point of an amateur station?
- 3A-1.2 What is the term for the operating position of an amateur station where the control operator function is performed?
- 3A-2.1 What is an amateur emergency communication?
- 3A-2.2 What is the term for an amateur radiocommunication directly related to the immediate safety of life of an individual?
- 3A-2.3 What is the term for an amateur radiocommunication directly related to immediate protection of property?
- 3A-2.4 Under what circumstances does the FCC declare that a general state of communications emergency exists?
- 3A-2.5 How does an amateur operator request the FCC to declare that a general state of communications emergency exists?
- 3A-2.6 What type of instructions are included in an FCC declaration of a general state of communications emergency?
- 3A-2.7 What should be done by the control operator of an amateur station which has been designated by the FCC to assist in promulgating information relating to a general state of communications emergency?
- 3A-2.8 During an FCC-declared general state of communications emergency, how must the operation by, and with, amateur stations in the area concerned be conducted?
- 3A-3.1 Notwithstanding the numerical limitations in the FCC Rules, how much transmitting power shall be used by an amateur radio station?
- 3A-3.2 What is the maximum transmitting power permitted an amateur station transmitting on 1825-kHz?
- 3A-3.3 What is the maximum transmitting power permitted an amateur station transmitting on 3725-kHz?
- 3A-3.4 What is the maximum transmitting power permitted an amateur station transmitting on 7080-kHz?
- 3A-3.5 What is the maximum transmitting power permitted an amateur station transmitting on 7.125-MHz?
- 3A-3.6 What is the maximum transmitting power permitted an amateur station in beacon operation?
- 3A-3.7 What is the maximum transmitting power permitted an amateur station transmitting on 21.150-MHz?
- 3A-3.8 What is the maximum transmitting power permitted an amateur station transmitting on 146.52-MHz?
- 3A-4.1 How must a General control operator at a Novice's station make the station identification?
- 3A-4.2 How must a newly-upgraded Technician control operator with a Certificate of Successful Completion of Examination identify a station when transmitting on 146.34-MHz pending receipt of a new operator license?
- 3A-4.3 How must a newly-upgraded General control operator with a Certificate of Successful Completion of Examination identify a station when transmitting on 14.325-MHz pending the receipt of a new operator license?

- 3A-4.4 When making the station identification by telephony, which language(s) must be used?
- 3A-4.5 To assist in correct station identification using telephony, what aid does the FCC recommend?
- 3A-4.6 What emission mode may always be used for station identification, regardless of the transmitting frequency?
- 3A-5.1 Under what circumstances may a third-party directly participate in radiocommunications from an amateur station?
- 3A-5.2 Where must the control operator be situated when a third-party is participating in radiocommunications from an amateur station?
- 3A-5.3 What must the control operator be doing when a third-party is participating in radiocommunications from an amateur station?
- 3A-5.4 Under what circumstances, if any, may a third-party assume the functions of the control operator of an amateur station?
- 3A-6.1 Under what circumstances, if any, may third-party traffic be transmitted to a foreign country by an amateur station?
- 3A-6.2 What types of messages may be transmitted by an amateur station to a foreign country for a third-party?
- 3A-6.3 What types of material compensation, if any, may be involved in third-party traffic transmitted by an amateur station?
- 3A-6.4 What types of business communications, if any, may be transmitted by an amateur station on behalf of a third-party?
- 3A-7.1 What kinds of one-way communications by amateur stations are not considered broadcasting?
- 3A-7.2 What is a one-way communication?
- 3A-7.3 Under what circumstances may an amateur station transmit a one-way communication consisting of information bulletins?
- 3A-7.4 What are four types of permissible one-way amateur radiocommunications?
- 3A-8.1 What are the frequency privileges authorized to a Technician control operator in the HF amateur bands?
- 3A-8.2 Which operator licenses authorize privileges on the frequency 52.525-MHz?
- 3A-8.3 Which operator licenses authorize privileges on the frequency 146.52-MHz?
- 3A-8.4 Which operator licenses authorize privileges on the frequency 223.50-MHz?
- 3A-8.5 Which operator licenses authorize privileges on the frequency 446.0-MHz?
- 3A-9.1 What frequency privileges are authorized to the General operator in the 160 meter band?
- 3A-9.2 What frequency privileges are authorized to the General operator in the 75/80 meter band?
- 3A-9.3 What frequency privileges are authorized to the General operator in the 40 meter band?
- 3A-9.4 What frequency privileges are authorized to the General operator in the 30 meter band?
- 3A-9.5 What frequency privileges are authorized to the General operator in the 20 meter band?
- 3A-9.6 What frequency privileges are authorized to the General operator in the 15 meter band?
- 3A-9.7 What frequency privileges are authorized to the General operator in the 12 meter band?
- 3A-9.8 What frequency privileges are authorized to the General operator in the 10 meter band?
- 3A-9.9 Which operator licenses authorize privileges on the frequency 1820-kHz?
- 3A-9.10 Which operator licenses authorize privileges on the frequency 3950-kHz?
- 3A-9.11 Which operator licenses authorize privileges on the frequency 7230-kHz?
- 3A-9.12 Which operator licenses authorize privileges on the frequency 10.125-MHz?
- 3A-9.13 Which operator licenses authorize privileges on the frequency 14.325-MHz?

- 3A-9.14 Which operator licenses authorize privileges on the frequency 21.425-MHz?
- 3A-9.15 Which operator licenses authorize privileges on the frequency 24.895-MHz?
- 3A-9.16 Which operator licenses authorize privileges on the frequency 29.616-MHz?
- 3A-10.1 On what frequencies within the 80 meter band may F1 emissions be transmitted?
- 3A-10.2 On what frequencies within the 40 meter band may F1 emissions be transmitted?
- 3A-10.3 On what frequencies within the 20 meter band may F1 emissions be transmitted?
- 3A-10.4 On what frequencies within the 75 meter band may A5 emissions be transmitted?
- 3A-10.5 On what frequencies within the 20 meter band may A5 emissions be transmitted?
- 3A-10.6 On what frequencies within the 15 meter band may A4 emissions be transmitted?
- 3A-10.7 On what frequencies may A1 emissions be transmitted?
- 3A-11.1 What is the nearest to the band edge an amateur station's transmitting frequency can be set?
- 3A-11.2 When selecting a transmitting frequency, what allowance should the control operator make for sideband emissions resulting from keying or modulation?
- 3A-12.1 What is the maximum mean output power an amateur station may use to operate under the special rules for radio control of remote model craft and vehicles?
- 3A-12.2 What information must be indicated on the writing affixed to the transmitter in order to operate under the special rules for radio control of remote model craft and vehicles?
- 3A-12.3 What are the station identification requirements for an amateur station operated under the special rules for radio control of remote model craft and vehicles?
- 3A-12.4 Where must the writing indicating the station call sign and the licensee's name and address be affixed in order to operate under the special rules for radio control of remote craft and vehicles?
- 3A-13.1 How is the sending speed (signaling rate) for digital communications determined?
- 3A-13.2 What is the greatest sending speed permitted for an F1 emission on frequencies below 28-MHz?
- 3A-13.3 What is the greatest sending speed permitted for an F1 emission on frequencies between 28- and 50-MHz?
- 3A-13.4 What is the greatest sending speed permitted for an F1 emission on frequencies between 50- and 220-MHz?
- 3A-13.5 What is the greatest sending speed permitted for an F1 emission on frequencies above 220-MHz?
- 3A-13.6 When A2, F1 or F2 emissions are transmitted on frequencies below 50-MHz, what is the maximum radio or audio frequency shift permitted?
- 3A-13.7 When A2, F1 or F2 emissions are transmitted on frequencies above 50-MHz, what is the maximum radio or audio frequency shift permitted?
- 3A-13.8 What is the maximum bandwidth permitted for a transmission from an amateur station using a non-standard digital code on frequencies between 50- and 220-MHz?
- 3A-13.9 What is the maximum bandwidth permitted for a transmission from an amateur station using a non-standard digital code on frequencies between 220- and 1215-MHz?
- 3A-13.10 What is the maximum bandwidth permitted for a transmission from an amateur station using a non-standard digital code on frequencies above 1215-MHz?
- 3A-14.1 What is meant by the term broadcasting?
- 3A-14.2 What is the only class of station that may be retransmitted by an amateur station?
- 3A-14.3 Under what circumstances, if any, may a broadcast station retransmit the signals from an amateur station?
- 3A-14.4 Under what circumstances, if any, may an amateur station be used to engage in some form of broadcasting?
- 3A-15.1 Under what circumstances, if any, may music be transmitted by an amateur station?
- 3A-16.1 Under what circumstances, if any, may an amateur station transmit secret codes in order to obscure the meaning of messages?
- 3A-16.2 What types of abbreviations or signals are not considered codes or ciphers?
- 3A-16.3 When, if ever, are codes and ciphers permitted in domestic amateur radiocommunications?
- 3A-16.4 When, if ever, are codes and ciphers permitted in international amateur radiocommunications?
- 3A-17.1 Under what circumstances, if any, may amateur stations transmit radiocommunications containing obscene, indecent, or profane words?
- SUBELEMENT 3B - Operating Procedures (6 questions)
- 3B-1.1 What is the meaning of: "Your report is five-seven...?"
- 3B-1.2 What is the meaning of: "Your report is three-three...?"
- 3B-1.3 What is the meaning of: "Your report is plus 20dB...?"
- 3B-1.4 What is meant by the term flattopping in a single-sideband transmission?
- 3B-1.5 How should the audio gain control be adjusted on a single-sideband transmitter?
- 3B-1.6 How should the audio gain control be adjusted on a frequency modulated transmitter?
- 3B-1.7 How should the call sign WE5TZO be stated phonetically?
- 3B-1.8 How should the call sign KC4HRM be stated phonetically?
- 3B-1.9 How should the call sign AF6PSQ be stated phonetically?
- 3B-1.10 How should the call sign NB8LXG be stated phonetically?
- 3B-2.1 In what segment of the 20 meter band do most amateur RTTY communications take place?
- 3B-2.2 In what segment of the 80 meter band do most amateur RTTY communications take place?
- 3B-2.3 What is meant by the term Baudot?
- 3B-2.4 What is meant by the term ASCII?
- 3B-2.5 What is meant by the term AMTOR?
- 3B-2.6 What is the most common frequency shift currently used in RTTY transmissions in the HF amateur bands?
- 3B-2.7 What is the most common frequency shift currently used on the VHF amateur bands?
- 3B-2.8 What is an RTTY Mailbox?
- 3B-2.9 What is the purpose of transmitting a string of RYRYRYRYRY characters in RTTY?
- 3B-2.10 What are the two subset modes of AMTOR?
- 3B-3.1 How should a contact be initiated through a station in repeater operation?
- 3B-3.2 Why should users of a station in repeater operation pause briefly between transmissions?
- 3B-3.3 Why should users of a station in repeater operation keep their transmissions short and thoughtful?
- 3B-3.4 Why should simplex be used where possible instead of using a station in repeater operation?
- 3B-3.5 What is the proper procedure to break into an ongoing QSO through a station in repeater operation?
- 3B-3.6 What is the purpose of repeater operation in the Amateur Radio Service?
- 3B-3.7 What is a repeater frequency coordinator?
- 3B-3.8 What is meant by a bandplan?
- 3B-3.9 What is the usual input/output frequency separation for a station in repeater operation in the 2 meter band?
- 3B-3.10 What is the usual input/output frequency separation for a station in repeater operation in the 420-450 MHz band?
- 3B-3.11 What is the usual input/output frequency separation for a station in repeater operation in the 6 Meter band?
- 3B-3.12 What is the usual input/output frequency separation for a station in repeater operation in the 220-225 MHz band?
- 3B-4.1 What is meant by VOX transmitter control?
- 3B-4.2 What is the common name for the circuit that causes a transmitter to key-on when a person speaks into the microphone?

- 3B-5.1 What is meant by full break-in telegraphy?
- 3B-5.2 What Q signal is used to indicate full break-in telegraphy capability?
- 3B-6.1 When selecting a telegraphy transmitting frequency, what is the minimum frequency separation from a QSO in progress that should be allowed in order to minimize interference?
- 3B-6.2 When selecting a single-sideband transmitting frequency, what is the minimum frequency separation from a QSO in progress that should be allowed in order to minimize interference?
- 3B-6.3 When selecting an F1 RTTY transmitting frequency, what is the minimum frequency separation from a QSO in progress that should be allowed in order to minimize interference?
- 3B-6.4 Why should local amateur communications be conducted on VHF and UHF frequencies?
- 3B-6.5 How can on-the-air transmissions be minimized during a lengthy transmitter testing or loading up procedure?
- 3B-6.6 When a frequency conflict arises between a simplex operation and a station in repeater operation, why does good amateur practice call for the simplex operation to move to another frequency?
- 3B-6.7 What should an amateur operator do before installing a station within one mile of an FCC monitoring station?
- 3B-6.8 What is the proper Q signal to use to determine whether a frequency is in use before making a transmission?
- 3B-6.9 What is meant by "making the repeater time out"?
- 3B-6.10 During the commuter rush hours, which types of operation should relinquish the use of the repeater?
- 3B-7.1 What is an azimuthal (or great circle) map?
- 3B-7.2 How is an azimuthal (or great circle) map of importance to an amateur operator conducting international radiocommunications?
- 3B-7.3 What is the most useful type of map to use when orienting a directional antenna toward a station 5,000 miles distant?
- 3B-7.4 A directional antenna pointed in the long-path direction to another station is generally oriented how many degrees from the short-path heading?
- 3B-7.5 What is the short-path beam heading to Antarctica?
- 3B-8.1 When permitted, transmissions to amateur stations in another country must be limited to only what type of messages?
- 3B-8.2 In which International Telecommunication Union Region is the continental United States?
- 3B-8.3 In which International Telecommunication Union Region are Alaska and Hawaii?
- 3B-8.4 In which International Telecommunication Union Region are American Samoa, Commonwealth of Northern Mariannas Islands, Guam Island, and Wake Island?
- 3B-8.5 For uniformity in international radiocommunication, what time measurement standard should amateur operators use worldwide?
- 3B-9.1 What is the proper distress calling procedure when using telephony?
- 3B-9.2 What is the proper distress calling procedure when using telegraphy?
- 3B-10.1 What is the Amateur Auxiliary to the FCC's Field Operations Bureau?
- 3B-10.2 What are the objectives of the Amateur Auxiliary?

SUBELEMENT 3C - Radio Wave Propagation (6 Questions)

- 3C-1.1 What is the ionosphere?
- 3C-1.2 Which ionospheric layer limits daytime radiocommunications in the 80 meter band to short distances?
- 3C-1.3 Why are the electrified characteristics of the ionospheric layers subject to wide variations?
- 3C-1.4 Which layer of the ionosphere is mainly responsible for long-distance skywave radiocommunications?
- 3C-1.5 What are the two distinct sub-layers of the F layer during the daytime?
- 3C-1.6 What is the maximum distance that can be covered in one hop using the F2 layer?

- 3C-1.7 What is the maximum distance that can be covered in one hop using the E layer?
- 3C-1.8 What is the lowest region of the ionosphere that is useful for long-distance radio wave propagation?
- 3C-1.9 What is the average height of maximum ionization of the E layer?
- 3C-1.10 What is the approximate height of the F2 layer at noontime in the summer?
- 3C-1.11 What type of solar radiation is most responsible for ionization in the outer atmosphere?
- 3C-1.12 What is the lowest ionospheric layer?
- 3C-1.13 What is the critical angle as used in radio wave propagation?
- 3C-1.14 What is the region of the outer atmosphere which makes long-distance radiocommunications possible as a result of bending of the radio waves?
- 3C-2.1 Which layer of the ionosphere is most responsible for absorption of radio signals during daylight hours?
- 3C-2.2 When is ionospheric absorption most pronounced?
- 3C-2.3 What is the main reason that the 160, 80 and 40 meter bands are useful for short-distance communications during daylight hours?
- 3C-2.4 What is the principal reason that the 1.8-MHz through 7-MHz bands are useful for short-distance communications only during high-sun hours?
- 3C-2.5 During daylight hours, what effect does the D layer of the ionosphere have on 80 meter radio waves?
- 3C-2.6 What causes ionospheric absorption of radio waves?
- 3C-3.1 What is the highest radio frequency that will be refracted back to earth called?
- 3C-3.2 What causes the maximum usable frequency to vary?
- 3C-3.3 If the maximum usable frequency on the path from Minnesota to Africa is 23-MHz, which band should offer the best chance for a successful contact?
- 3C-3.4 If the maximum usable frequency on the path from Ohio to West Germany is 17-MHz, which band is most favorable for successful communication?
- 3C-3.5 What does the term maximum usable frequency refer to?
- 3C-4.1 What is usually the condition of the ionosphere just before sunrise?
- 3C-4.2 At what time of day does maximum ionization of the ionosphere occur?
- 3C-4.3 Which two daytime ionospheric layers combine into one layer at night?
- 3C-4.4 Minimum ionization of the ionosphere occurs daily at what time?
- 3C-5.1 Over what periods of time do sudden ionospheric disturbances normally last?
- 3C-5.2 What can be done at an amateur station to continue radiocommunications during a sudden ionospheric disturbance?
- 3C-5.3 What effect does a sudden ionospheric disturbance have on the daylight ionospheric propagation of HF radio waves?
- 3C-5.4 How long does it take a solar disturbance that increases the sun's radiation of charged particles to affect radio wave propagation on Earth?
- 3C-5.5 How long does it take a solar disturbance that increases the sun's ultraviolet radiation to cause ionospheric disturbances on Earth?
- 3C-5.6 Sudden ionospheric disturbances occur as a result of radio wave absorption in which layer of the ionosphere?
- 3C-6.1 When two stations are within each other's skip zone on the frequency being used, what mode of propagation would it be desirable to use?
- 3C-6.2 What is a characteristic of backscatter signals?
- 3C-6.3 When is E layer ionization at a maximum?
- 3C-6.4 What makes backscatter signals often sound distorted?
- 3C-6.5 What is the radio wave propagation phenomenon that allows a signal to be detected at a distance too far for ground wave propagation but too near for normal sky wave propagation?
- 3C-6.6 When does ionospheric scatter propagation on the high-frequency bands most often occur?
- 3C-7.1 What is solar flux?
- 3C-7.2 What is the solar-flux index?
- 3C-7.3 When are solar-flux index measurements taken?

- 3C-7.4 What type of propagation conditions would a solar-flux index value of 66 represent?
- 3C-7.5 A solar-flux index of 80 would indicate what type of propagation conditions on the 15 meter band?
- 3C-7.6 A solar-flux index of greater than 80 would indicate what type of propagation conditions on the 10 meter band?
- 3C-7.7 For widespread long distance openings on the 6 meter band, what solar-flux index values would be required?
- 3C-7.8 If the MUF is high and HF radiocommunications are generally good for several days, a similar condition can usually be expected how many days later?
- 3C-8.1 What is the transmission path of a wave that travels directly from the transmitting antenna to the receiving antenna called?
- 3C-8.2 How are VHF signals within the range of the visible horizon propagated?
- 3C-9.1 Ducting occurs in which region of the atmosphere?
- 3C-9.2 What effect does tropospheric bending have on 2 meter radio waves?
- 3C-9.3 What atmospheric phenomenon causes tropospheric ducting of radio waves?
- 3C-9.4 Tropospheric ducting occurs as a result of what phenomenon?
- 3C-9.5 What atmospheric phenomenon causes VHF radio waves to be propagated several hundred miles through stable air masses over oceans?
- 3C-9.6 In what frequency range does tropospheric ducting most often occur?
- 3C-10.1 What is a geomagnetic disturbance?
- 3C-10.2 Which latitude paths are more susceptible to geomagnetic disturbances?
- 3C-10.3 What can be the effect of a major geomagnetic storm on radiocommunication?
- 3D-4.3 How is neutralization of an rf amplifier accomplished?
- 3D-4.4 For what purpose is a neutralized circuit used in an rf amplifier?
- 3D-4.5 What is the reason for neutralizing the final amplifier stage of an amateur radio transmitter?
- 3D-5.1 How can the PEP output of a transmitter be determined with an oscilloscope?
- 3D-5.2 Where in the antenna transmission line should a peak-reading wattmeter be attached to determine the transmitter power output?
- 3D-5.3 If a directional rf wattmeter indicates 90 watts forward power and 10 watts reflected power, what is the actual forward power?
- 3D-5.4 If a directional rf wattmeter indicates 96 watts forward power and 4 watts reflected power, what is the actual forward power?
- 3D-5.5 What is the approximate dc input power to a Class B power amplifier stage in a transmitter when the emission is F3 and the PEP output is 1500 watts?
- 3D-5.6 What is the approximate dc input power to a Class C power amplifier in a transmitter when the emission is F1 and the PEP output is 1000 watts?
- 3D-5.7 What is the approximate dc input power to a Class AB power amplifier stage in a transmitter when the emission is A0 and the PEP output is 500 watts?
- 3D-6.1 What piece of test equipment contains horizontal and vertical channel amplifiers?
- 3D-6.2 What types of signals does an oscilloscope measure?
- 3D-6.3 What is an oscilloscope?
- 3D-6.4 What can cause phosphor damage to an oscilloscope CRT?
- 3D-7.1 What is a multimeter?
- 3D-7.2 How can the range of a voltmeter be extended?
- 3D-7.3 How is a voltmeter typically connected to a circuit?
- 3D-7.4 How can the range of an ammeter be extended?
- 3D-8.1 What is a marker generator?
- 3D-8.2 What two pieces of test equipment are used to adjust the frequency response of a circuit?
- 3D-8.3 What type of circuit is used to inject a frequency calibration signal into a communications receiver?
- 3D-8.4 What does a marker generator do?
- 3D-8.5 When adjusting a transmitter filter circuit, what device is connected to the transmitter output?
- 3D-9.1 What is a signal tracer?
- 3D-9.2 How is a signal tracer used?
- 3D-9.3 What is a signal tracer normally used for?
- 3D-10.1 What is the most effective way to reduce or eliminate radio frequency interference to high fidelity systems?
- 3D-10.2 What should you do if your properly-operating amateur radio equipment is the source of interference on a neighbor's telephone equipment?
- 3D-10.3 What type of sound would be heard from a public address system when audio rectification occurs in response to a nearby single-sideband transmitter?
- 3D-10.4 How can the possibility of audio rectification occurring be minimized?
- 3D-10.5 What type of sound would be heard from a public address system when audio rectification occurs in response to a nearby full-carrier AM telephony transmitter?
- 3D-11.1 What is a reflectometer used for?
- 3D-11.2 When adjusting the impedance match between an antenna and feedline, where should the match-indicating device be inserted for best accuracy?
- 3D-11.3 What is the device that indicates impedance mismatches in an antenna system?
- 3D-11.4 What is a reflectometer?
- 3D-11.5 Where should a reflectometer be inserted into a long antenna transmission line in order to obtain the most valid standing wave ratio indication?
- 3D-12.1 What result might be expected when using a single-sideband transmitter even with a properly-adjusted speech processor?
- 3D-12.2 What is the reason for using a properly-adjusted speech processor with a single-sideband transmitter?
- 3D-12.3 If a transmitter is 100% modulated, will the use of a speech processor increase the peak power output?
- SUBELEMENT 3D - Amateur Radio Practice (9 questions)
- 3D-1.1 Where should the green wire in an ac line cord be attached in a power supply?
- 3D-1.2 Where should the colored wire in a three wire line cord (117-vac) be attached in a power supply?
- 3D-1.3 Where should the white wire in a three wire line cord (117-vac) be attached in a power supply?
- 3D-1.4 Why is the retaining screw in one terminal of a light socket made of brass while the other one is silver colored?
- 3D-1.5 Which wires in a four conductor line cord should be attached to fuses in a 234-vac primary (single phase) power supply?
- 3D-1.6 What size wire is normally used on a 15-ampere, 117-vac household lighting circuit?
- 3D-1.7 What size wire is normally used on a 20-ampere, 117-vac household appliance circuit?
- 3D-1.8 What could be a cause of the room lights dimming when the transmitter is keyed?
- 3D-1.9 What size fuse should be used on a #12 wire household appliance circuit?
- 3D-2.1 How much electrical current flowing through the human body is usually fatal?
- 3D-2.2 What is the minimum voltage considered to be dangerous to humans?
- 3D-2.3 Where should the main power-line switch for a high voltage power supply be situated?
- 3D-2.4 What safety feature is provided by a bleeder resistor in a power supply?
- 3D-3.1 What kind of input signal is used to test the amplitude linearity of an SSB transmitter while viewing the output with an oscilloscope?
- 3D-3.2 To test the amplitude linearity of an SSB transmitter with an oscilloscope, what should the audio input to the transmitter be?
- 3D-3.3 Why would a two-tone test be used for testing the amplitude linearity of an SSB transmitter?
- 3D-3.4 What kind of a test is used to check the amplifier portion of an SSB transmitter for amplitude linearity?
- 3D-3.5 What can be determined by making a "two-tone test" using an oscilloscope?
- 3D-4.1 How can the grid-current meter in a power amplifier be used as a neutralizing indicator?
- 3D-4.2 Why is neutralization in some vacuum tube amplifiers necessary?

- 3D-12.4 Under which band conditions should a speech processor not be used?
- 3D-12.5 What effect can result from using a speech processor with a single-sideband transmitter?
- 3D-13.1 At what point in the coaxial line should an electronic T-R switch be installed?
- 3D-13.2 Give a reason for using an electronic T-R switch instead of a mechanical one.
- 3D-13.3 What station accessory facilitates QSK operation?
- 3D-14.1 What is a transmatch?
- 3D-14.2 What is a balanced line?
- 3D-14.3 What is an unbalanced line?
- 3D-14.4 What is balun?
- 3D-14.5 What is the purpose of an antenna matching circuit?
- 3D-14.6 What is an antenna noise bridge?
- 3D-14.7 How is an antenna noise bridge used?
- 3D-14.8 How is a transmatch used?
- 3D-15.1 How does the emitted waveform from a properly adjusted single-sideband transmitter appear on a monitoring oscilloscope?
- 3D-15.2 What is the best instrument for checking transmitted signal quality from a telegraphy/single-sideband transmitter?
- 3D-15.3 What is a monitoring oscilloscope?
- 3D-15.4 How is a monitoring oscilloscope connected in a station in order to check the quality of the transmitted signal?
- 3D-16.1 What is a dummy antenna?
- 3D-16.2 Of what materials may a dummy load suitable for rf be made?
- 3D-16.3 What station accessory is used in place of an antenna during transmitter tests when no signal radiation is desired?
- 3D-16.4 What is the purpose of a dummy load?
- 3D-16.5 A dummy load for use with a 100 watt single-sideband transmitter with 50 ohm output should be able to dissipate at least how many watts?
- 3D-17.1 What is an S-meter?
- 3D-17.2 What is the most appropriate instrument to use when determining antenna horizontal radiation patterns?
- 3D-17.3 What is a field-strength meter?
- 3D-17.4 What is a simple instrument that can be useful for monitoring relative rf output during antenna and transmitter adjustments?
- 3D-17.5 When the power output from a transmitter is increased from 250 watts to 1000 watts, how should the S-meter reading on a nearby receiver change?
- 3D-17.6 How many watts must the power output from a transmitter change to raise the S-meter reading on a nearby receiver from S-7 to S-9?
- 3D-18.1 For most accurate readings, where should a wattmeter be inserted?
- 3D-18.2 What factors determine the practical upper frequency limit of an rf wattmeter?
- 3D-18.3 What is a directional wattmeter?

SUBLEMENT 3E - Electrical Principles (4 questions)

- 3E-1.1 What is the unit measure of impedance?
- 3E-1.2 What is the opposition to the flow of an alternating electrical current in a circuit containing both resistance and reactance called?
- 3E-2.1 What is the unit measure of resistance?
- 3E-3.1 What is meant by the term reactance?
- 3E-3.2 In an electrical circuit, what is the opposition to the flow of alternating current caused by inductance or capacitance called?
- 3E-4.1 On what electrical principle is the transformer based?
- 3E-4.2 To induce a current in a transformer secondary what must be the condition in the primary?
- 3E-4.3 Describe the electrical property of an inductor.
- 3E-5.1 Describe the component parts of a capacitor.
- 3E-5.2 What is the total capacitance of two equal capacitors, connected in a series?
- 3E-5.3 What is the total capacitance of two or more capacitors connected in parallel?
- 3E-6.1 When will a power source deliver maximum output?
- 3E-7.1 What is the unit measurement of impedance, reactance and resistance called?
- 3E-7.2 What is an ohm?

- 3E-7.3 If 120-volts is measured across a 470 ohm resistor, approximately how much current is flowing through the resistor?
- 3E-8.1 What do the units microfarad and picoFarad specify?
- 3E-8.2 A microfarad equals how many farads?
- 3E-8.3 A picofarad equals how many farads?
- 3E-9.1 What is the basic unit of inductance?
- 3E-10.1 Your signal strength report is "10db over S9". If you turn off your 1-kw amplifier and reduce power to 100 watts, what would the signal strength be?
- 3E-11.1 How can the current be calculated when the voltage and resistance are known in a dc circuit.
- 3E-11.2 A 12-volt battery supplies a current of 0.25-amperes to a load. What is the input resistance of this load?
- 3E-11.3 The product of the current and what force gives the electrical power in a circuit?
- 3E-12.1 If a 1.0-ampere current source is connected to two parallel-connected 10 ohm resistors, how much current passes through each resistor?
- 3E-12.2 In a series circuit composed of a voltage source and several resistors, what determines the voltage drop across any particular resistor?
- 3E-12.3 In a parallel circuit with a voltage source and several branch resistors, what relationship does the total current have to the current in the branch currents?
- 3E-13.1 If a power supply delivers 200 watts of electrical power at 400-vdc to a load, how much current does the load draw?
- 3E-13.2 A transmitter's pilot light is connected to 12-vdc and draws 0.2-amperes. How many watts of electrical power are being consumed?
- 3E-13.3 If a current of 7.0-milliamperes passes through a load resistance of 1.25-kilohms, how many watts are being dissipated?
- 3E-13.4 How can the power be calculated when the current and voltage are known.
- 3E-14.1 How is the total resistance found when several resistors are in series?
- 3E-14.2 How can the total resistance be calculated in a circuit consisting of two parallel resistors, assuming that each resistor is greater than 3 ohms.
- 3E-14.3 What is the total inductance of two equal, parallel-connected inductors?
- 3E-15.1 The primary winding of a transformer has 2250 turns and the secondary winding has 500 turns. If the primary is connected to 117-vac, what is the secondary voltage?
- 3E-15.2 What is the turns ratio of a transformer to match an audio amplifier having an output impedance of 200 ohms to a speaker having a load impedance of 10 ohms?
- 3E-15.3 What is the turns ratio of a transformer to match an audio amplifier having an output impedance of 600 ohms to a speaker having a load impedance of 4 ohms?
- 3E-15.4 A transformer is used to match an audio amplifier having an output impedance of 2000 ohms to a speaker. This transformer has a turns ratio of 24 to 1. What is the impedance of the speaker?
- 3E-16.1 What is the voltage that would produce the same amount of heat over time in a resistive element as would an applied sine wave ac voltage?
- 3E-16.2 What is the peak-to-peak voltage of a sine wave which has an RMS voltage of 117-volts?
- 3E-16.3 A sine wave of 17-volts peak is equivalent to how many volts RMS?

SUBLEMENT 3F - Circuit Components (3 questions)

- 3F-1.1 How can you find a carbon resistor's electrical tolerance rating?
- 3F-1.2 Why would a large size resistor be substituted for a smaller one of the same resistance?
- 3F-1.3 For what primary purpose is a resistor used in electrical circuits?
- 3F-1.4 What causes resistors in an electrical circuit to increase in temperature?
- 3F-1.5 What is the effect of an increase in ambient temperature on a carbon resistor's resistance?

- 3F-1.6 If the first three color bands on a group of resistors indicate that they all have the same resistance, what further information do you need about each resistor to insure that you can select those of the group that have nearly equal values?
- 3F-2.1 As the plate area of a capacitor increases, does its maximum possible capacitance decrease, increase or stay the same?
- 3F-2.2 As the plate spacing of a capacitor increases, what happens to its capacitance?
- 3F-2.3 What does an electrolytic capacitor contain?
- 3F-2.4 Where does a capacitor store energy?
- 3F-2.5 What moves in a typical variable capacitor?
- 3F-2.6 Are paper dielectric capacitors polarized?
- 3F-2.7 What kind of capacitors do most power-supply filters use?
- 3F-2.8 What type of capacitor is most often used in power supply circuits to "filter" the rectified alternating current?
- 3F-2.9 What type of capacitor is used in power supply circuits to filter out transient voltage spikes across the transformer secondary winding.
- 3F-2.10 How are the characteristics of a capacitor usually specified?
- 3F-3.1 A small air-core coil has an inductance of 5-microhenrys. What do you have to do if you want a 5-millihenry coil with the same physical dimensions?
- 3F-3.2 Describe an inductor.
- 3F-3.3 As an iron core is inserted in a coil, what happens to its inductance?
- 3F-3.4 For radio frequency power applications, with which type of inductor would you get the least amount of loss?
- 3F-3.5 How may inductors become self-resonant?
- 3F-3.6 Where does an inductor store energy?
- 3F-3.7 What electrical circuit component can change a 120-vac to a 400-vac?
- 3F-4.1 In a transformer, what is the source of energy connected to?
- 3F-4.2 When no load is attached to the secondary winding of a transformer, what is current in the primary winding called?
- 3F-4.3 In what terms are the primary and secondary winding ratings of a power transformer usually specified?
- 3F-5.1 What is the peak-inverse-voltage rating of a power-supply rectifier?
- 3F-5.2 Why must silicon rectifier diodes be thermally protected?
- 3F-5.3 What is a heat sink?
- 3F-5.4 Silicon diode rectifiers of the type used in a power-supply circuit have two major ratings which must not be exceeded. What are these two ratings?

SUBELEMENT 3G - Practical Circuits (2 questions)

- 3G-1.1 Why should a resistor and capacitor be wired in parallel with power-supply rectifier diodes?
- 3G-1.2 What function do capacitors serve when resistors and capacitors are connected in parallel with high voltage power-supply rectifier diodes?
- 3G-1.3 Describe the output waveform of an unfiltered full wave rectifier connected to a resistive load.
- 3G-1.4 How many degrees of a cycle does a half-wave rectifier utilize?
- 3G-1.5 How many degrees of a cycle does a full-wave rectifier utilize?
- 3G-1.6 Where is a power supply "bleeder resistor" connected?
- 3G-1.7 What components comprise a power supply filter network?
- 3G-1.8 What should a power supply rectifier's peak-inverse-voltage rating be in either a full-wave or half-wave rectifier circuit?
- 3G-2.1 What is a high-pass filter usually connected to?
- 3G-2.2 Where is the proper place to install a high-pass filter?
- 3G-2.3 Where is a band-pass filter usually installed?
- 3G-2.4 Does a low-pass filter attenuate electrical energy below or above its cut-off frequency?
- 3G-2.5 What is a circuit called which passes electrical energy above a certain frequency, but blocks electrical energy below that frequency?

- 3G-2.6 What is a circuit called which passes electrical energy below a certain frequency, but blocks electrical energy above that frequency?
- 3G-2.7 What is a circuit called that blocks electrical energy above a certain frequency and also blocks electrical energy below a lower frequency, but passes electrical energy between the two frequencies?
- 3G-2.8 For proper operation, what should the impedance of a low-pass filter be as compared to the impedance of the transmission line into which it is inserted.
- 3G-2.9 What general group of radio frequency energy does a band-pass filter reject?
- 3G-3.1 Name a circuit that is likely to be found in all types of receivers.
- 3G-3.2 In a filter-type SSB transmitter, what stage combines radio frequency and audio frequency energy to produce a double-sideband suppressed carrier signal?
- 3G-3.3 In a superheterodyne receiver intended for AM reception, what stage combines the received radio frequencies with energy from a local oscillator to produce an output operating at the receiver's intermediate frequency?

SUBELEMENT 3H - Signals and Emissions (4 questions)

- 3H-1.1 What emission type is A0?
- 3H-1.2 What emission type is A3?
- 3H-1.3 What emission type is A3J?
- 3H-1.4 What emission type is F1?
- 3H-1.5 What emission type is F2?
- 3H-1.6 What emission type is F3?
- 3H-1.7 What is the emission symbol for telegraphy by frequency shift keying without the use of a modulating audio frequency?
- 3H-1.8 What is the emission symbol for telegraphy by the on-off keying of a frequency modulating audio frequency?
- 3H-1.9 What is the emission symbol for telephony by amplitude modulation?
- 3H-1.10 What is the emission symbol for telephony by frequency modulation?
- 3H-2.1 What is altering the amplitude, phase or frequency of a radio frequency wave for the purpose of conveying information called?
- 3H-3.1 In what type of modulation does the instantaneous amplitude (envelope) of the radio frequency signal vary in accordance with the modulating audio frequency signal?
- 3H-3.2 What determines the spectrum space occupied by each group of sideband frequencies generated by a correctly operating amplitude modulated transmitter?
- 3H-4.1 What does suppressing the carrier in an AM signal change the emission type to?
- 3H-4.2 What is one advantage of double-sideband suppressed-carrier transmission over standard full-carrier AM?
- 3H-5.1 Which one of the popular voice-modulated emissions normally has the narrowest bandwidth?
- 3H-5.2 What type of emission is produced by a radiotelephone transmitter that uses a balanced modulator followed by a 2.5-kHz bandpass filter?
- 3H-6.1 What feature makes the F3 emission mode especially suitable for channelized local VHF/UHF communication?
- 3H-6.2 What type of emission is produced by a transmitter that uses a reactance modulator stage?
- 3H-7.1 What other modulation system does phase modulation most resemble?
- 3H-7.2 If a reactance modulator is connected to an rf power amplifier, what will the predominantly resulting emission be?
- 3H-8.1 What purpose does the carrier serve in an A3 emission?
- 3H-8.2 What signal component appears in the center of an amplitude modulated transmitter's emitted bandwidth?
- 3H-9.1 What sideband frequencies will be generated by an AM transmitter having a carrier frequency of 7250-kHz when it is modulated less than 100 percent by an 800-Hz pure sine wave?

- 3H-9.2 Which emission type does not have sidebands resulting from modulation?
- 3H-10.1 How many times over the maximum deviation is the bandwidth of an F3 transmitter's emissions?
- 3H-10.2 Is the bandwidth of a VHF FM transmitter's emissions narrower or greater at the operating frequency than it is at the output of the modulated oscillator operating at HF?
- 3H-11.1 When viewing an amplitude modulated transmitter's rf envelope on an oscilloscope, what affects the envelope's shape during modulation?
- 3H-12.1 To what is the frequency deviation of an FM emission proportional?
- 3H-13.1 What usually results if a voice transmitter is overmodulated?
- 3H-13.2 What happens if an A3 emission is overmodulated?
- 3H-14.1 What is the result of overdeviation of the oscillator in an F3 transmitter?
- 3H-14.2 What causes splatter?
- 3H-15.1 An F3 transmitter is to have 5-kHz deviation at a final output frequency of 146.52-MHz. The reactance-modulated oscillator frequency is 12.21-MHz and the final frequency is obtained through multiplication. What is the oscillator frequency deviation?
- 3H-15.2 The input to a particular stage in an amateur radio transmitter is a signal centered on the frequency 5.3 MHz. The output from this stage contains the same signal translated in frequency in such a way that it is centered on 14.3 MHz. What type of stage is it?
- 3H-16.1 What type of emission can be used for radioteleprinting?
- 3H-16.2 What are the two states of the teleprinter codes most commonly used by amateur radio operators?
- 3H-16.3 What emission type results when an audio frequency shift keyer is connected to the microphone input of a properly adjusted SSB transmitter?
- 3H-16.4 How many frequency components are in the signal from an audio frequency shift keyer at any instant?
- 3H-16.5 How is frequency shift related to keying speed in an fsk emission?
- SUBELEMENT 3I - Antennas and Feedlines (7 questions)**
- 3I-1.1 What kind of antenna best reduces the received signal strength of signals coming from some directions while strengthening signals arriving from a certain desired direction?
- 3I-1.2 What is a Yagi antenna?
- 3I-1.3 Why is a Yagi antenna often used for amateur radiocommunications on the 20 meter band?
- 3I-1.4 Give a physical description of the radiating elements of a horizontally-polarized Yagi antenna.
- 3I-1.5 What is the name of a parasitic beam antenna using two or more straight metal-tubing elements arranged physically parallel to each other?
- 3I-1.6 How many directly-driven elements does a Yagi antenna have?
- 3I-1.7 What sort of matching system is best suited to match unbalanced coaxial feedlines to Yagi antennas when no balun is being used?
- 3I-1.8 What is meant by the term parasitic when describing beam antennas?
- 3I-1.9 What is the correct method of increasing the bandwidth of a parasitic beam antenna?
- 3I-2.1 How much gain can a two-element quad antenna be expected to provide over a one-half wavelength dipole?
- 3I-2.2 What kind of antenna array is composed of a square or diamond-shaped full-wave closed loop driven element with parallel parasitic element(s)?
- 3I-2.3 Approximately how long is one side of the driven element of a quad antenna?
- 3I-2.4 Approximately how long is the wire in the driven element of a quad antenna?
- 3I-2.5 What is a delta loop?
- 3I-2.6 Give a brief description of the radiating elements in a quad antenna?
- 3I-2.7 In quad antennas, how does the electrical length of the director element compare with that of the driven element?
- 3I-2.8 In quad antennas, how does the electrical length of the reflector element compare with that of the driven element?
- 3I-2.9 How would you modify a 20 meter two-element quad antenna to provide 15 and 10 meter coverage?
- 3I-3.1 A square one-wavelength quad loop is to resonate at 21,250-kHz. How long should each side be?
- 3I-3.2 How tall must a tower be to support a 20 meter Yagi antenna one-half wavelength above a perfectly conducting surface?
- 3I-3.3 What length should the radials be on a ground-plane antenna intended for use in the 30 meter band?
- 3I-3.4 Approximately how long is each element of a delta-loop antenna?
- 3I-3.5 A square one-wavelength loop is to be resonant at 14.175-MHz. How long should each side be?
- 3I-3.6 State the formula for approximating the full-wave driven element loop lengths for HF quad antennas.
- 3I-3.7 State the formula for approximating the full-wave reflector loop length for HF quad antennas.
- 3I-3.8 State the formula for approximating the full-wave director loop lengths for HF quad antennas.
- 3I-3.9 How long should each side of a square one-wavelength loop be for resonance on 21.225-MHz?
- 3I-4.1 What kind of radio waves does a half-wavelength antenna that is perpendicular to the earth's surface radiate?
- 3I-4.2 Does most man-made electrical noise radiation in the HF-VHF spectrum tend to be vertically or horizontally polarized?
- 3I-4.3 What do the terms vertical and horizontal as applied to wave polarization refer to?
- 3I-4.4 Are vertical and horizontal wave polarization examples of elliptical or linear polarization?
- 3I-4.5 What electromagnetic polarization does a cubical quad antenna have that has top and bottom sides running parallel to the earth, and the feedpoint midway in the driven element's bottom side?
- 3I-4.6 What electromagnetic polarization does a cubical quad antenna have that has top and bottom sides running parallel to the earth, and the feedpoint midway up the driven element's vertical side?
- 3I-4.7 What electromagnetic polarization does a cubical quad antenna have that is set in a diamond configuration with all sides at 45 degrees to the earth's surface, and with the driven element fed at the bottom corner?
- 3I-4.8 What electromagnetic polarization does a cubical quad antenna have that is set in a diamond configuration with all sides at 45 degrees to the earth's surface, and with the driven element fed at the side corner?
- 3I-5.1 What is the feedpoint impedance for a half-wave dipole antenna suspended horizontally one-quarter wavelength or more above the ground?
- 3I-5.2 What is the feedpoint impedance for a quarter wavelength vertical antenna with a horizontal ground plane?
- 3I-6.1 When compared to a dipole, what directional radiation characteristics does a quad antenna have?
- 3I-6.2 What radiation pattern does an ideal half-wave dipole have?
- 3I-6.3 How does proximity to the ground affect the radiation pattern of a horizontal dipole antenna?
- 3I-6.4 What is meant by antenna front-to-back ratio?
- 3I-6.5 If a slightly smaller parasitic element is placed parallel to a dipole antenna, a few feet away from it, with both elements in the same horizontal plane, what effect will this have on the radiation pattern of the antenna?
- 3I-6.6 Define main lobe as used in directional antenna theory.
- 3I-6.7 What is a directional antenna?
- 3I-7.1 Upon what does the characteristic impedance of a parallel conductor antenna feedline depend?
- 3I-7.2 What is the characteristic impedance of various coaxial cables commonly used at amateur radio stations for antenna transmission lines?
- 3I-7.3 What effect, if any, does the length have upon the characteristic impedance of a coaxial cable?

- 3I-7.4 What is the characteristic impedance of common TV-type twin lead?
- 3I-8.1 What is standing wave ratio?
- 3I-8.2 When is corona likely to occur with a parallel conductor feedline?
- 3I-9.1 What is standing wave ratio a measure of?
- 3I-9.2 When an unbalanced feedline's SWR increases, what happens to the power loss in that feedline?
- 3I-9.3 A resonant antenna having a feedpoint impedance of 200 ohms resistance is connected to a feedline having a characteristic impedance of 50 ohms. What will the standing wave ratio of this system be?
- 3I-9.4 When a feedline is terminated by a resistance equal to its characteristic impedance, how is the feedline's power loss affected?
- 3I-10.1 Why is a split-stator capacitor useful in a matching circuit?
- 3I-10.2 How is an inductively-coupled matching network used in an antenna system using a center-fed resonant dipole and coaxial feedline?
- 3I-10.3 What kind of 1:1 ratio transformer is installed in transmitting feedlines to couple coaxial cable to a balanced antenna?
- 3I-11.1 How is the amount of attenuation of a radio signal passing through a coaxial cable affected by the characteristic impedance of the cable?
- 3I-11.2 How does the amount of attenuation of a 2 meter radio frequency signal passing through a coaxial cable differ than one at 160 meters?
- 3I-11.3 What type of feedline is best suited to operating at a high standing wave ratio?
- 3I-11.4 What is the effect on feedline attenuation when flat brown "twin-lead" gets wet?
- 3I-11.5 What is the general relationship between feedline loss and frequency?
- 3I-11.6 What happens to radio frequency energy not delivered to the antenna by a lossy coaxial feedline?
- 3I-11.7 Why might silicone grease or automotive car wax be applied to the outside of flat ribbon twin-lead feedline?
- 3I-11.8 In what values is radio frequency feedline loss usually expressed?
- 3I-11.9 As operating frequency decreases, what happens to conductor loss in a feedline?
- 3I-11.10 As operating frequency increases, what happens to dielectric loss in a feedline?
- 3I-11.11 As operating frequency increases, what happens to conductor loss in a feedline?
- 3I-11.12 As operating frequency decreases, what happens to dielectric loss in a feedline?
- 3I-12.1 What condition must be satisfied to prevent standing waves of voltage and current on an antenna feedline?

AUTO CALL ADVERTISING RATE SCHEDULE, EFFECTIVE MAY 1, 1985

	one month	six months	twelve months
FULL PAGE (8 1/2")	\$105.00	\$90.00	\$75.00
HALF PAGE (4 1/4" x 11")	75.00	65.00	55.00
(5 1/2" x 8 1/2")			
QUARTER PAGE (2 3/4 x 8 1/2")	45.00	40.00	35.00
EIGHTH PAGE (1 5/8" x 8 1/2")	25.00	20.00	15.00

The above is based on "ready for Camera" artwork, black ink on white stock, bleed on full page only.

For new advertisers, the 1 month rate will be billed until the 6 month or 12 month rate has been earned. At this time, a credit will be issued for future advertising. The 6 month or 12 month rate (as applicable) will be honored at the beginning of an advertising run if a firm purchase order is received at the beginning of the cycle. For further information contact:

Phil Russo W3ELS
7320 Oakcrest Drive
New Carrollton, Md.
20784

Please note: Closing is the 1st of the month preceeding the publication date. If unable to reach Phil Russo, please contact the editor, Ann Kelly, at 521-1877.

Metrovision Amateur TV Club

REPEATER WR4AAG 439.25 MHz In, 426.25 MHz OUT WITH AUDIO ALSO ON 430.75 MHz OUT.

MEETINGS: QUARTERLY DEC, MAR, JUN, SEP, IN THE ROTUNDA RM, SEMINARY TOWERS WEST ALEXANDRIA, VA.

ON-THE-AIR MEETINGS: FIRST SUNDAY OF EACH MONTH 2000 THRU WR4AAG TEST PICTURE: EVERY SUNDAY 1930-2000

ADDRESS: P.O. BOX 408, FALLS CHURCH, VA. 22046, FOR INFO: CALL DAVE PHILLIPS W3PJM 283-2747 or

BRUCE BROWN WA9GVK 370-1431

Antietam Radio Association,

ADDRESS: PO BOX NO. 52, HAGERSTOWN, MD. 21740

INFORMATION: KA3LQN, 301-791-4906, EVENINGS

MEETINGS: 1ST AND 3RD TUESDAYS, 8:00 PM. SUMMER: 2ND FLOOR OLD LEITERSBURG SCHOOL, LEITERSBURG, MD.

WINTER: CD HDQTRS. WASHINGTON COUNTY COURTHOUSE, HAGERSTOWN, MD. VISITORS WELCOME.

REPEATERS: W3CWC 146.34 IN, 146.94 OUT: K3UMV 147.69 IN, 147.09 OUT

NET: EVERY TUESDAY NIGHT AT 7:00 PM ON 146.34/194 REPEATER

Maryland FM Association

MEETINGS: QUARTERLY, 1:00 PM, SAVAGE MD.

REPEATER: WA3DVD 146.16/76, 449.1/444.1

ON THE AIR: 24 HOURS

ADDRESS: MD. FM ASSOC., PO BOX HARMANS, MD. 21077

Frederick Amateur Radio Club

ADDRESS: PO BOX 1260 FREDERICK, MD. 21701

MEETINGS: 2ND TUES. EACH MONTH IN OLD COURT HOUSE - USE CHURCH ST. ENTRANCE WEST SIDE AT 2000 HOURS

AREA REPEATERS: 146.13/73 147.66/06 443.875/448.875 AND 449.80/444.80

Amateur Radio Research and Development Corp.

MAILING ADDRESS: PO DRAWER 6128, MCLEAN, VA. 22106

INFORMATION: TERRY FOX, WB4JFI, 703-356-8334 EVES.

REPEATER: WD4IWC/R, TYSON'S CORNER, 147.81/21 VOICE; WB4JFI (5), DOWNTOWN, 145.010 PACKET ONLY

COMPUTER BULLETIN BOARD: 703-734-1387, 110/300/450/600-BAUD ASCII

Washington Adventist Amateur Radio Association

MEETING TIME: LAST SUNDAY OF EVERY MONTH, 4PM

MEETING PLACE: SLIGO 7-DAY ADVENTIST CHURCH OFFICE BUILDING, 7710 CARROLL TAKOMA PARK, MD.

FOR INFORMATION CONTACT: HENRY MILLER, W3BWN 474-7376



Maryland Mobileers Amateur Radio Club

ADDRESS: POST OFFICE BOX 784, SEVERNA PARK, MD 21146

GENERAL MEETING: FIRST FRIDAY (SECOND FRIDAY IF CONFLICT) AT 7:30 PM AT CID BUILDING ON GROUNDS OF CROWNSVILLE STATE HOSPITAL.

REPEATERS: CROWNSVILLE: 146.205 IN/146.805 OUT, GLEN BURNIE: INACTIVE

NETWORK: EVERY MONDAY AT 9:00 PM ON THE CROWNSVILLE REPEATER.

Southern Maryland Amateur Radio Club

MAILING ADDRESS: SMARC, PO BOX 273, CHELTENHAM, MD. 20623

MEETINGS: MEMBERSHIP MEETING - SECOND FRIDAY OF EACH MONTH, 7:30 PM AT THE CHURCH OF THE NATIVITY, MANCHESTER DR. FIRST TRAFFIC LIGHT ON RT 5 (BRANCH AVE) SOUTH OF THE BELTWAY.
BREAKFAST CLUB - EVERY SATURDAY MORNING 8-10 AM AT MAC-DONALDS WOODYARD RD AND RT 5, CLINTON, MD. TALK-IN ON REPEATER.

REPEATER: WA3OPC/R 147.75/15 OPEN "THE VOICE OF SOUTHERN MARYLAND"

NETS: VHF ON REPEATER 8PM TUESDAY INFORMAL. HF ON 28.750 MHz 9 PM THURSDAY INFORMAL EVERYONE WELCOME, JOIN US IF YOU CAN.

Arlington Amateur Radio Club

MEETINGS: 3RD TUESDAY, 7:30 PM, RED CROSS BLDG. 4333 ARLINGTON BLVD.

ADDRESS: AARC, C/O RED CROSS. 4333 ARLINGTON BLVD, ARLINGTON, VA 22203

INFORMATION: Don Dunlap WB4QAX 241-0041

Radio Amateur Satellite Corporation



MAILING ADDRESS: PO BOX 27; WASHINGTON DC. 20044

NETS: TUESDAYS, 9PM EST, 3850 KHz. and 146.835 MHz.

Montgomery Amateur Radio Club

PO BOX 611, GAITHERSBURG, MD. 20879

REPEATER: KC3K/R, 146.04/64

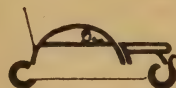
Northern Virginia FM Association

ADDRESS: PO BOX 486 MCLEAN VA. 22101

BULLETIN: EVERY WEDNESDAY, 8PM 146.31/91

REPEATERS: 146.31/91, 146.19/79, 224.1/222.5, 449.75/444.75

MORE INFO: MARC NACHMAN, WD4LWD, (H) 644-0166 (W) 534-4422



Maryland Emergency Phone Net

MEETINGS: NIGHTLY AT 6:00 PM. 3.920Mhz

NET MANAGER: KJ3E, JOHN BAROLET, 108 ELLIOT CT., CALIFORNIA, MD. 20619

Goddard Amateur Radio Club

MEETINGS: THIRD WEDNESDAY OF EACH MONTH IN ROOM N13 OF BUILDING 12, GODDARD SPACE FLIGHT CENTER, GREENBELT, MD.

TWO-METER NET: EVERY NON-MEETING WEDNESDAY NIGHT AT 8PM ON THE AMSAT/GARC REPEATER: 146.835/.235.

INFORMAL GET-TOGETHER: FIRST WEDNESDAY OF EACH MONTH AT THE CLUB STATION, OPPOSITE THE EAST GATE ON SOIL CONSERVATION ROAD. 6:30 PM - ?.

MAILING ADDRESS: PO BOX 86, GREENBELT MD. 20770.

INFORMATION: FRANK BAUER, KA3HDO; RICK PENC, NE2J

Ole Virginia Hams Amateur Radio Club

MEETINGS: THIRD MONDAY OF EVERY MONTH AT 2000 LMT. VISITORS WELCOME. MEETINGS HELD IN THE BASEMENT AUDITORIUM, NORTHERN VIRGINIA ELECTRIC COOPERATIVE BUILDING, 10323 LOMOND DRIVE, MANASSAS, VA. 22110.

REPEATER: WA4FPM 146.37/146.97 Mhz OPEN REPEATER. INFORMATION NET EVERY THURSDAY AT 2000 LMT. FOR INFORMATION ON MEETINGS, LICENSE CLASSES, ETC., WRITE OVHARC, PO BOX 1255, MANASSAS, VA. 22110.

Laurel Amateur Radio Club

PO BOX 259 ANNAPOLIS JUNCTION, MD. 20701

MEETINGS: SECOND WEDNESDAY, 2000 LOCAL, INFORMAL MEETING
FOURTH WEDNESDAY, 2000 LOCAL, RED CROSS BUILDING
OTHER WEDNESDAYS, 2030 LOCAL ON 147.54 MHz

FOR FURTHER INFORMATION CONTACT: W3DQI, KD3S or K3LDE.



Capital City Amateur Radio Society

MEETINGS: 2000 LOCAL TIME, THIRD WEDNESDAY OF EACH MONTH AT THE 4TH DISTRICT POLICE HEADQUARTERS, 6001 GEORGIA AVE. NW, WASHINGTON, DC. 20012

REPEATER: N3ADG, 144.51 MHz IN, 145.11 MHz OUT

NETS: EVERY NON-MEETING WEDNESDAY AT 2000 LOCAL TIME ON CCARS REPEATER.

FOR MORE INFO CONTACT CHESTER, W3EIL, 1719 FRANKLIN ST. NE. WASHINGTON, DC. 20011, 529-9598.

Alexandria Radio Club

MEETINGS: SECOND AND FOURTH FRIDAY EVENING, 8PM AT THE RED CROSS CHAPTER HOUSE, 401 DUKE STREET.
CLUB MEMBERS MEET ON THE W4HFH REPEATER EACH THURSDAY EVENING AT 8PM.

REPEATERS: 147.315 & 444.600 MHz CROSSBAND; 224.82 & 53.13 MHz CROSSBAND.



Antietam Radio Association, Inc.

ADDRESS: PO BOX 52, HAGERSTOWN, MD. 21740 INFORMATION: N3ECM 301-791-4906 EVENINGS

MEETINGS: 1ST AND 3RD TUESDAYS, 8:00 PM AT CD EOC, WASH. CO. COURTHOUSE, HAGERSTOWN, MD.

REPEATERS: W3CWC 146.34/146.94 K3UMV 147.69/147.09

NET: EVERY TUESDAY NIGHT AT 7:00 PM ON THE 146.34/146.94 REPEATER

Naval Research Laboratory Radio Club

REPEATER: W3NKF/R 222.90 MHz IN, 224.50 MHz OUT

MEETINGS: FIRST THURSDAY OF THE MONTH, 11:45 AM, BLDG. 60, RM 113, NRL ALL DOD PERSONNEL WELCOME

ADDRESS: W3NKF CODE 9015, NRL, WASHINGTON, DC. 20375

TRUSTEE: TOM McCASKILL KA3HNC

FOR INFO: CALL DR. BOB DASENBROCK N4CHP 767-2003 OR TOM McCASKILL KA3HNC 767-2597.

Quarter Century Wireless Association (Vic Clark Chapter)

Sterling Park Amateur Radio Club

MAILING ADDRESS: SPARC, CALL BOX 599, STERLING PARK, VA. 22170

MEETINGS: THIRD MONDAY OF EACH MONTH EXCEPT JULY, AUGUST, DECEMBER

MORE INFORMATION: ART NEVINS, WA4NTP, 437-9382

CLUB FREQUENCIES: 146.55 MHz ANYTIME: 3.83 MHz 2030 WEDNESDAYS

SPONSOR OF ARRL INCOMING QSL BUREAU FOR 2-LETTER "4" CALL SIGNS

Quarter Century Wireless Association

Prince George's Wireless Association Inc.

MEETINGS: FIRST TUESDAY OF EACH MONTH AT 7:30 PM AT RED CROSS SERVICE BUILDING 6202 BELCREST RD.
HYATTSVILLE, MD. 20784.

Mount Vernon Amateur Radio Club

MEETINGS: SECOND THURSDAY OF EACH MONTH, 7-900 PM AT MT. VERNON GOV. DISTRICT CENTER, 2511 PARKER LANE,
ALEXANDRIA.

NET: EVERY TUESDAY 2100 ON THE REPEATER FREQUENCY.

REPEATER: WD4PDP/4 146.655/055

Patuxent Amateur Radio Communication Society

MEETINGS: FIRST SUNDAY OF MONTH AT 2:00 PM.

TWO METER NET: 146.43 WEDNESDAY AT 7:30 PM.

INFORMATION: 627-3882

Woodbridge Wireless, Inc.

REPEATER: WB4FQR/R 147.84/24; AUTOPATCH; TIME:

ADDRESS: PO BOX 112, WOODBRIDGE, VA. 22194

MONTHLY MEETING: THIRD TUESDAY AT 7:30 POTOMAC LIBRARY, OPITZ BLVD. WOODBRIDGE VA.

INFORMAL NETS: MONDAY 8:00 PM ON 147.84/24; WEDNESDAY 9:00 PM ON 28.164 MHz (SLOW CW); THURSDAY 9:00
PM ON 28.575 MHz USB

Tri-County Repeater Association

BULLETIN: EACH TUESDAY, 7:15 PM, ON-AIR, VIA "WESTLINK"

MEETINGS: EACH TUESDAY, 7:30 PM, ON-AIR, FOLLOWING BULLETIN

INFORMATION: TRI-COUNTY REPEATER ASSN., P.O. BOX 710, COLLEGE PARK, MD. 20740

REPEATER: WA3WJD/RPT, 147.180 MHz OUTPUT, CTCSS ENCODED

Northern Virginia Radio Club

MEETINGS: 2ND THURSDAY EACH MONTH AT 7:30 PM LOCAL TIME RED CROSS BLD. 4117 CHAIN BRIDGE RD., FRFX., VA.

ON-THE-AIR: 4TH THURSDAY EACH MONTH AT 8:30 PM LOCAL TIME

ADDRESS: 4117 CHAIN BRIDGE ROAD. FAIRFAX VIRGINIA 22030

INFORMATION: 734-2987

The Northern Virginia Radio Club will be providing communications for the First Annual Dolly Barton 10 kilometer run June 9 at George Mason University for the Fairfax Chapter of the American Red Cross. The Club will not be meeting in June and no Field Day is planned this year. Our July meeting will be a barbeque at the home of President Phil Sager, WB4FDT, on the second Sunday. The building housing the Fairfax Chapter of the American Red Cross has been sold, and the Chapter will be moving to a new location, not yet decided, some time in 1986.

SHACK SALES

NON-COMMERCIAL ADS, 3¢ PER WORD; COMMERCIAL ADS, 7¢. (\$1.00 PER ISSUE MINIMUM)
DEADLINE: 8th OF THE PREVIOUS MONTH.
NAME AND ADDRESS REQUIRED BUT WILL NOT BE PRINTED IF DESIRED.

SEND COPY TO: AUTO-CALL - SHACK SALES
121 S. Highland St.
Arlington, Va. 22204

NOTE: Count all words, groups of numbers(1 word), abbreviations (1 word), model#(1 word) etc. REMEMBER IT IS ONLY 3¢ a word.

ALL ADS PRE-PAID "Include \$ (preferably check) with Ad, we can not afford to bill at these rates."
REMEMBER \$1.00 MINIMUM.

PLEASE type or print ALL SHACK SALE AD's and use a full sheet of paper, (small slips get lost or over looked). Poor penmanship could lead to MISTAKES(oops!).

I try to type the Ad's the way you send in your originals. If you use all CAPITALS YOU WILL GET ALL CAPITALS. If you want something underlined I will underline. Look through the SHACK SALES and let me know, by example, how you want yours typed. THANK YOU, Ann M. Kelly, EDITOR.

NEED ANTENNA OR TOWER WORK DONE? CALL L. CHERTOK W3GRF 297-4888.

AMATEUR & 2 WAY RADIO REPAIRS & INSTALLATIONS ETC.
Call Bruce Pellicot KA3EIE 301-461-1550 H, 301-955-1557 W.

ESTATE SALE: 75S-1-32S-1-516F2 pwr supply, solid state rectifiers, many updates. Excellent, with manuals. \$400. GSB-201 Linear \$150. Heathkit HM-2140 dual wattmeter like new \$65. 2KW antenna tuner in cabinet \$85. Astatic 531 hand mike \$10. Electro voice EV638 mic and grip stand \$25. Regency HR-2A 2meter Transceiver \$80. Floyd Martin W4RW 703-430-2499.

COMMERCIAL QUALITY FM INSTALLS AND REPAIRS CALL HERM K2LEQ/3 952-1414.

ever for your QSL's? Write for new QSL's, printed on the finest two and three colors. We will mail and on their way back to you. Bring days of receipt of your order. Box 9, Ellerslie, Md. 21529.

AS A SERVICE TO THE LOCAL AMATEUR RADIO FRATERNITY, THE FOUNDATION FOR AMATEUR RADIO sponsors a WIDOWS' ASSISTANCE PROGRAM.

Heath Electronic keyer HD-10	\$ 25.00
EICO VTVM MOD 232	25.00
Collins 51J4 receiver mint	300.00
Homebrew 14 MHz Linear ½ kw	75.00
Heath GDO HD1250 - New	40.00
Millen GDO	40.00
TRACS cw keyer - new	35.00
Drake L-7 Linear c P.S.	700.00
IC-211 2 meter all mode	300.00
KLM 140 W 2 mtr amp	200.00
Trionyx Freq counter 600mhz	150.00
Quad spreader elements x3	20.00
Henry radio 12 VDC P.S. 20A	100.00

All equipment listed above is sold in as is condition, and NO WARRANTIES EXIST, EXPRESS or IMPLIED. For further details on The Widows Assistance Program contact Chairman of The Widows Assistance Program, Bill Parrott, W4URL, 8548 Georgetown Pike, McLean, Va. 22102. Phone during the day (703) 893-8383 between 8:30am and 8:00pm only Please.

FOR MEMBER CLUBS ONLY

FOR MEMBER CLUBS ONLY

FROM TIME TO TIME. THE WIDOW'S ASSISTANCE PROGRAM OF THE FOUNDATION FOR AMATEUR RADIO HAS EQUIPMENT OR PARTS THAT ARE NOT SUITABLE FOR SALE AT HAMFESTS. RATHER THAN DESTROY THESE ITEMS, WE OFFER THEM AS A DONATION TO VARIOUS AMATEUR RADIO CLUBS. THESE ITEMS WOULD BE ESPECIALLY USEFUL TO CLUBS WHICH OPERATE NOVICE TRAINING PROGRAMS OR HAVE ACTIVE CLUB BUILDING PROJECTS. IF YOUR CLUB IS INTERESTED, PLEASE CONTACT MARC PRESSMAN, N4DR AS LISTED IN THE WIDOW'S ASSISTANCE ADVERTISEMENT.

FOR RENT: QTH in Northern Va., 5 minute walk to Ballston subway, 4 bedroom, brick, 1½ baths, party room, living room, combo kitchen/dining room, fireplace. 60' tower, 3-element beam, ½ acre, fenced yard. Garage. Karl, K4YT, 703-525-0485 evenings.

REMEMBER The BRATS MARYLAND HAMFEST & COMPUTERFEST, oldest and largest of the 3 hamfests at The Howard County Fairgrounds, Sunday, July 28. For table reservations and information, write BRATS, PO Box 5915; Baltimore, MD. 21208.

HELP: I need access to well functioning OSCAR X ground station to maintain long standing DX sked. Need access via 2 meter gateway station arrangement, phone patch or personal visitation of shack. Call MARC N4DR if you can help. w-541-6416 h-460-5108.

CHESS PLAYERS: Radio chess is now national/international on scheduled nets. You don't need to be a chess expert to enjoy both hobbies combined. Send SASE: K2VJ, Box 682B, Cologne, NJ 08213.

EEB**EEB****BUTTERNUT SELECTS EEB AS DEALER****THE "FINEST" IS NOW AT EEB'S ANTENNA BANK**

FREE DOOR PRIZE — Stop at EEB's Booth at the Gaithersburg Hamfest and register for a **FREE Butternut HF6V**/no purchase necessary and you don't have to be present to win.

This 6 Band HF vertical has been donated courtesy of Butternut Electronics Company in celebration of EEB becoming their "NEWEST" dealer.

**EEB**

- We ship worldwide
- Shipping charges not included
- Prices & Specifications subject to change without notice
- Canadian Orders VISA MC or POSTAL MAIL ORDERS ONLY!



10 Miles West of Washington D C
 Sorry—No COD's
 10-5 Tues Wed Fri
 10-9 Thursday
 10-4 Saturday
 Closed Sunday and Monday

Electronic Equipment Bank

516 Mill Street N E
 Vienna Virginia 22180

Order Toll Free 800-368-3270
 Virginia 703-938-3350

EEB

SHACK SALES

ATTENTION HAMTRONICS LPA-2-15 KIT OWNERS: Have acquired 6 meter and 2 meter versions of 2 watt in 15 watt out amplifier kit. I am missing 4 trimmer capacitors for both versions. NEEDED is info on values and/or part numbers of mica trimmers used in both versions. Contact Rick, NE2J /co Goddard ARC PO Box 86 Greenbelt, Md. 20770 or phone 344-9175 (days), 776-9312 (nites, week-ends). Info would be greatly appreciated so I can complete kits.

FOR SALE: Mini-Products beam with third element reflector kit with instructions, tuned for 6, 10, 15, 20 meters; \$130. small Allinace T.V. roter with control box, \$25, or swap beam and roter for a H.T. ICOM IC2At call Dale after 7pm 703-368-7540.

TEXAS INSTRUMENTS "SILENT 700" dual cassette ASR data terminals. Model 742, programmable, built-in 110/150/300/1200 baud modem, RS-232-C or dc-current loop serial interface. Have specs, manuals and 1001 DAA if you want to connect directly to phone line. Sell or trade for Bird, DVM, 2 meter rig,. Bill, K30F, Rockville, 301-929-1915.

730 ICOM with MATCHING POWER SUPPLY and HAND MIC. MINT condition. All manuals, auto supply cord in factory cartons. \$595. Call Dottie 691-1746 after 5:30.

NEED Instruction Manual or photocopy with circuit diagram for Measurements Inc. Model 82 Signal Generator. Please call Jack Geist, N3BEK 942-5949.

TEN TEC ARGONAUT 515 QRP rig with 208-A CW/Notch filter \$300. 2½ amp regulated power supply (sold with above only) \$15. Jim, WJ4M (703) 494-4373.

HOUSE SOLD MOVING OUT of area mid June. Must sell gear Icom 720 A Transceiver and Drake TR-7, power supply phone patch, MFJ tuner 900 and 941C, Mosely 3 element tribander, Hustler 5 band vertical, Ringo Ranger Vertical, CDE Rotor and Control Unit, Speaker low prices Shel K3RZT 525-4984.

SALE, TI - 99-4A SOFTWARE: TERMINAL EMULATOR 11 AND RS-232 CARD NEVER USED, CALL 948-0324.

FOR SALE: Heath SSB Transceiver model HW101 AC Power supply model HP23C, Speaker model HS1161 Transceiver and pwr. supply just completed and factory checked \$450.00 AKAI reel to reel stereo tape deck model GX280 DSS \$175.00. Paymaste ribbon writer series 8000 like new \$125. Omega Flight master pilots watch \$300. Frank Maier (660 Jason Court Stone Mt. Ga. 30083). or call 521-1846 locally for info until Ga. phone can be published.

FOR SALE: Blower, Dayton 2C841, 115 VAC 50/60 hz, free air 1585 RPM, 18 watts 350 CFM \$53.75 Grainger Supply wholesale (P. 1120, Catalog 365, spring 1984). Used about 20 hours. \$30 or offer. W3HML. 202-561-8060.

FOR SALE: General Radio Variac, 100Q, 115VAC 18A 2KVA, 3/4" diam. shaft 1 5/8" long, minus control wheel. Mint condition. \$50 or offer. 30 position rotary switch. Tech Labs, Inc; Palisades Park, NJ. Type 900-1N30-6. 3 7/8" square, 11 1/4" long, projecting 1/4" steel shaft (overall shaft length 14 1/4"), 6 wafers, low loss G-10 wafer material. Ordered for project that was not completed. Cost \$100 when bought. Have all paperwork. \$50 or offer. GIVING AWAY: TEKFAV TV receiver WR/D magazines. Sept. 1966 thru March 1982. Book 107, vol. 7, copyright 1965. Book 111 vol. 11, cpyright 1973. Book 112, 1975. Book 114, 1978. Aluminum chassis, .1" thick 7075-T6, 11 7/8" x 16 7/8" x 3". Two inches by 14½" cutout on one long side; panel can be attached to this side. Was custom made for me at an earlier time, but cannot use now because of apartment space limitations. Ideal for high power final. \$15 or offer. W3HML. (202) 561-8060.

LOOK WHAT YOU ARE MISSING!

Your ARRL/CRRL membership
buys ALL THESE SERVICES
AND MORE. ACT NOW!

MEMBERSHIP APPLICATION

Name _____ Call _____

Street _____

City _____ Prov./State _____ PC/Zip _____

\$25 in U.S. /\$30 in Canada/\$33 elsewhere (U.S. funds)
Licensed amateurs, age 45 or over, upon submitting proof of age, may request the special dues rate of \$20 in the U.S. (\$25 in Canada, \$28 elsewhere, in U.S. funds)

For postal purposes, fifty percent of dues is allocated to QST, the balance for membership.

VISA or ChargeX No. _____ Expires _____

Master Charge No. _____ Bank No. _____ Expires _____

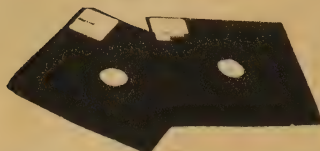
The American Radio Relay League
225 Main St. Newington, CT. 06111 USA

SAVE

DISCOUNT COMPUTER SUPPLIES:

(In Stock)

BIG BUY



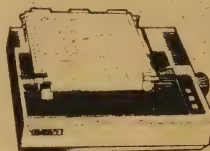
**SAVE
20% to 50%**

DISKETTES

GENERIC	SSDD	\$34.99/25
GENERIC	DSDD	\$49.99/25
FUJI	SSDD	17.99/10
FUJI	DSDD	22.80/10
ECHO	SSDD	17.99/10
ECHO	DSDD	22.80/10
ECHO	SSDD	04.59/02
ECHO	DSDD	05.49/02

EPSON

EPSON AMERICA, INC.



RX-80 Printer

PRINTERS

		F R I N T E R S	
TRANSTAR 120	DAISYWHEEL	\$424.99	
TRANSTAR 130	DAISYWHEEL	569.99	
TRANSTAR 140	DAISYWHEEL	999.99	
TRANSTAR 315	COLOR DOT/MATRIX	454.99	
EPSON RX-80	DOT/MATRIX	274.99	
EPSON RX-100	DOT/MATRIX	499.99	
EPSON FX-80	DOT/MATRIX	469.99	
EPSON FX-100	DOT/MATRIX	599.99	

Computer PAPER on SALE

2600 SHEETS OF 20#
CLEAN EDGE PAPER \$30.00

5 1/4" Dual(2) Floppy Disk Drives

	DOUBLE SIDED	DOUBLE DENSITY	LIST	SPECIAL	PAIR
SANYO/PANASONIC	229.95	169.95	325		
HITACHI	229.95	169.95	325		



Monitors

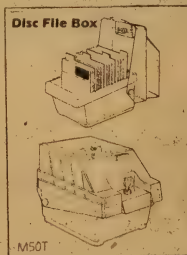
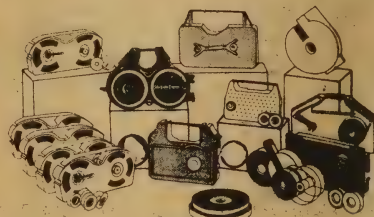


MONITORS

		M A G N A V O X	
		ALL BRAND NEW WITH 1 YEAR WARRANTY	
		COMPOSITE INPUT WITH SOUND	
		80X25-2000 CHR	
20 MHZ. BANDWIDTH		LIST	SPEC.
GREEN SCREEN BM7552	\$149	\$115	
AMBER SCREEN BM7522	159	125	
		FOR IBM PC	
GREEN SCREEN BM7513	189	125	
AMBER SCREEN BM7523	199	135	

COMPUTER PRINTER RIBBONS

R I B B O N S			Single	Dozen
IBM	SELECTRIC II HIYIELD	#320	\$2.00	\$18.00
"	" III	327	4.00	45.00
OKIDATA	MICROLINE 80/82/83/92/93	470	2.40	25.00
"	" 84/94	471	4.50	45.00
"	SLIMLINE 125/160	450	5.40	63.00
LEADING EDGE	STARWRITER 2/F10 NYLON:	153:	4.50	51.00
"	PROWRITER 2-1550/8510AP	114	5.50	64.00
C. ITOH	A-10-20/F-10-20/F-10-50	153:	4.50	51.00
"	" " " "	158	3.50	41.00
"	8500/8500B/1550/1550B/8023A	114	5.50	64.00
EPSON	MX 70/80/82	165	4.00	45.00
"	" 100	167	8.00	88.00
"	HX 20	164	2.00	18.00
COMMODORE	4022/8022	165	4.50	45.00
"	3022	470	2.40	27.00
"	8023P	113	5.90	69.00
"	8024	231	5.25	60.00
"	8026B/8028	220	2.50	28.00
"	"	222	2.50	28.00
APPLE	DOT MATRIX	114	4.75	55.00
"	DAISY WHEEL LPO	219	4.25	49.00
"	CENTRONICS 700 SERIES	111	3.50	40.00
ATARI	820	111	3.50	40.00
COLBCO	ADAM LETTER QUALITY	120	7.15	80.00
JUKI	"	320	2.00	18.00
GEMINI 10	"	470	2.40	25.00



SPECIAL
\$16.95



"GENERIC" DISCOUNT DISTRIBUTORS



P.O. BOX 62366

VIRGINIA BEACH, VA 23462

(804) 420-3955

MARYLAND HAMFEST

AND COMPUTERFEST

SPONSORED BY THE

BALTIMORE RADIO AMATEUR TELEVISION SOCIETY

SUNDAY, JULY 28, 1985

OPEN FOR SET-UP, SUNDAY AT 6 A.M.

DEALER SET-UP BEGINS SATURDAY AT 2 P.M.

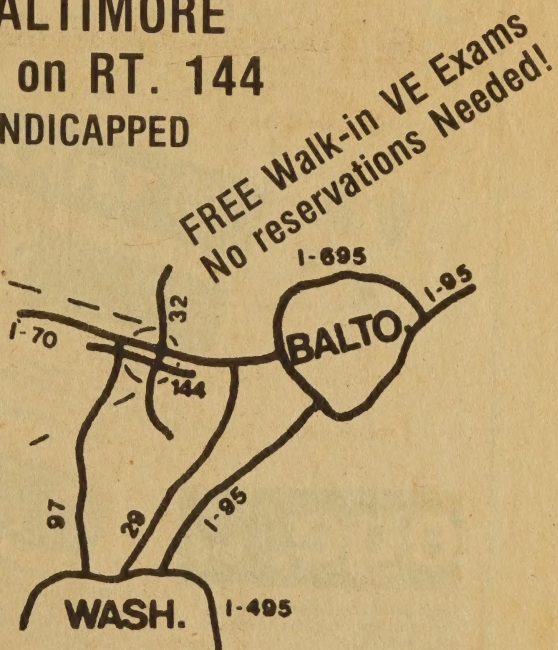
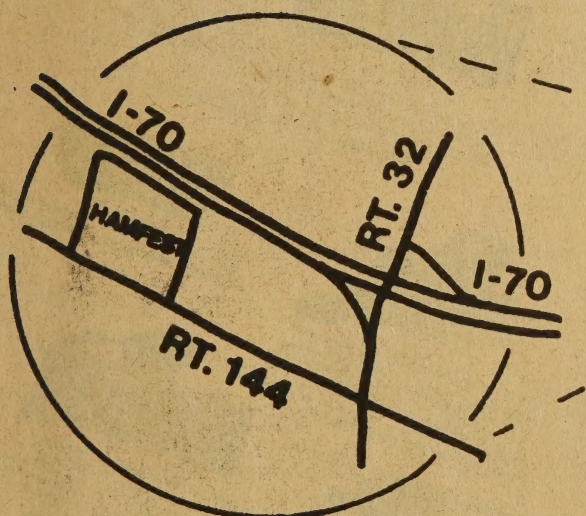
AT THE

HOWARD COUNTY FAIRGROUNDS

15 miles WEST of BALTIMORE

just off I-70 at RT. 32 on RT. 144

ACCESSIBLE TO THE HANDICAPPED



TOP PRIZES GIANT FLEA MARKET
GOOD FOOD REFRESHMENTS

INDOOR/OUTDOOR EXHIBIT AREAS
COMPUTERS RAIN OR SHINE

TALK-IN: 146.16/76
147.63/03
146.52

TICKETS: \$4
TAILGATING
TABLES AVAILABLE

KIDS UNDER 12 FREE!

FOR INFO & RESERVATIONS,
WRITE: BRATS
P.O. BOX 5915
BALTIMORE, MD 21208

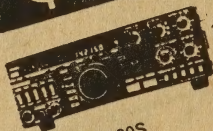
ege, inc.

NEWS RELEASE

ege, inc.

*Proudly announces we are now a
factory authorized **KENWOOD**
dealer.*

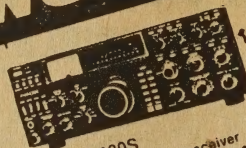
TRIO-KENWOOD SALE!



TS-430S
Most Advanced, Compact
HF Transceiver List \$899.95

- General Coverage Receiver
- USB/LSB/CW/AM/Optional FM
- 10Hz Dual Step Digital VFO
- Eight Memories
- w/Lithium Back-up
- Memory and Band Scan
- IF Shift—Notch Filter
- Speech Processor
- Narrow/Wide Filter Selection
- IF Shift
- Full Selection of Options Available

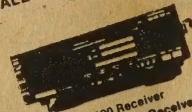
CALL FOR SPECIAL SALE PRICE!



TS-930S
Top of the Line HF Transceiver
TS-930S w/Antenna Tuner List \$1799
TS-930S w/o Antenna Tuner List \$1599

- General Coverage Receiver
- Superior Dynamic Range
- All Solid State—28 VDC Final
- QSK CW
- Optional Automatic Antenna Tuner
- Dual VFO w/8 Memories
- Dual Mode Noise Blanker
- RF Speech Processor
- Built-in AC Power Supply
- MUCH, MUCH MORE

CALL FOR SPECIAL SALE PRICES!



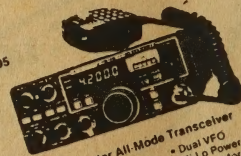
R-2000 Receiver
R-600—R-100S—R-2000 Receivers in Stock!
CALL FOR SPECIAL SALE PRICES—SAVE \$5



TS-830S—TS-530S 160-10 Meter HF Transceivers
• All Solid State Except Driver and Final Amplifier
• Wide Dynamic Range
• Variable Bandwidth Tuning (TS-830)
• IF Shift
• RF Speech Processor
• Adjustable Noise Blanker
• Full Selection of Optional Crystal Filters
• Built-in AC Power Supply
• TS-530S List \$739.95
• TS-830-S List \$949.95
CALL FOR SPECIAL SALE PRICES!



TM-201A/TM-401A 2m/70cm FM Transceiver
• 25W Output (TM-201A)
• 12W Output (TM-401A)
• Ultra Compact
• Dual VFO—3 Memories
• TM-201A List \$369.95
• TM-401A List \$399.95
CALL FOR SPECIAL SALE PRICES!
List \$599.95



TR-9130 2 Meter All-Mode Transceiver
• 25W Output—All Modes
• Six Memories—with Battery Back-up
• Memory and Band Scan
• TR-9130 List \$529.95
CALL FOR SPECIAL SALE PRICES
• Dual VFO
• Hi-Low Power Switch
• High Performance Noise Blanker



TW-4000A Dual Band
2m and 70cm FM in One Compact Package!
• Big LCD Readout
• 25W Output—Both Bands
• 10 Memories w/Scan and Back-up
• VS-1 Voice Synthesizer and Other Accessories in Stock—**CALL FOR SPECIAL PRICES!**
• Dual VFO
• GaAs FET Front End
• 16 Key Up/Down Mic



TR-7950/7930
• Large LCD Readout
• 21 Multi-Function Memory
• Lithium Back-up
• 45 Watts (TR-7950)
• 25 Watts (TR-7930)
• TR-7950 List \$399.95
• TR-7930 List \$359.95
CALL FOR SPECIAL SALE PRICES!
• Automatic Offset
• Built-in Encoder
• Memory or Band Scan
• MUCH, MUCH MORE!

ege, inc.

13646 Jefferson Davis Highway
Woodbridge, Virginia 22191
(703) 643-1063

Store Hours: MWF: Noon—8 p.m.
TThS: 10 a.m.—4 p.m.

Order Hours: M-F 11 a.m.—7 p.m.
Saturday 10 a.m.—4 p.m.

Send 3 stamps for a flyer.
Dealer Inquiries Invited

For orders and quotes call
toll free: 800-336-4799

Virginia orders and quotes
call toll free: 800-572-4201



Foundation Services

TRAINING PROGRAM

ANNE ARUNDEL.....
ARLINGTON..... Eric Nyman 536-4326
BALTIMORE..... Roland Slatkoff 922-5779
BRATS..... Cam Whetstone 486-2609

COLUMBIA..... Sue Crawford 286-3805
DEPT. OF STATE... Tom Dorset 525-1488
FREDERICK..... Steve Bauman 662-4552
FAIRFAX CITY.....
FRIENDSHIP..... Gene Knapp 766-7940
GODDARD..... Rick Penc, (301) 776-9312
HAGERSTOWN..... Bill Drager 733-9210
LAUREL..... Frank Treadwell 498-2213
LINTHICUM..... Cleo Bushy 789-2131
MONTGOMERY CO.... Walt Ramsey 949-3954
MOUNT VERNON.... Glenn Bilger 960-2956
NAVAL RESEARCH... Doug Kopp 767-2570
NVCC - Louden.... 777-1056, ext. 4551
OLE VA. HAMS..... Dick Miller 791-3839
PENTAGON..... Chip Lohman 695-0154
PG COUNTY..... Kay Alston 779-8369
SEVENTH DAY ADV.. Henry Miller 474-7376
SOUTHERN MD..... Rube Chernikoff 423-3372
VIENNA..... Bob Ruedisueli 759-5730
WARRENTON..... Don Kuse 347-8630
WOODBIDGE..... Ted Schaeffer 670-8247

The Training Class list is presented to enable those interested in getting some instruction in the theory and code necessary to pass the amateur exams, to find a location nearest or most convenient to them. At the end of most classes the Novice examination will be given, for others, the examination will have to be taken at the local FCC office or one of the Field Examination points.

WIDOW'S ASSISTANCE

The Foundation provides a Widow's Assistance program, for widows of local Amateurs, to assist them in evaluating and disposing of Amateur equipment. Contact Bill Parrott, W4URL, 8548 Georgetown Pike, McLean, Va., 22101. Phone (703) 893-8383 between 8:00 a.m. and 8:00 p.m., please.

LICENSE EXPIRATION NOTICE

This service provides a reminder before your license expires. Note the expiration date of your license on a self-addressed postcard and send it to Henry J. Kessler, KQ3S, 8904 Boxford Court Laurel, Maryland 20708. He will return the card to you at the proper time for reminder of renewal. This is a valuable service. Use it.

"**PLEASE REMEMBER** the Foundations's Scholarship Program. Each year your Foundation awards 15 or more scholarships to help younger amateurs pursue a college education, and thus to advance the cause of Amateur Radio nationally. The past generosity of individuals and organizations has made these scholarships possible. They will continue in the future as long as amateurs like yourself remember the scholarship program through their financial support. Why not consider a bequest, endowment, memorial fund or a legacy (in your name) to the Foundation's Scholarship Program? Contact any Foundation Officer for more information."

TO: AUTO-CALL MAGAZINE
121 South Highland Street, Arlington, VA. 22204

Please Enter My NEW _____ or RENEWAL _____ Subscription

For _____ 1 Year _____ 2 Years or _____.

I enclose \$1.00 for sample of latest issue postpaid.

NAME _____ CALL _____

QTH _____

/
Zip

I enclose/attach \$ _____ (Checks should be made payable to; Foundation for Amateur Radio)

Annual Subscription Rates; \$6.00 per year.

SUNDAY		MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY		SATURDAY	
2		3		4		5		6		7		8	
CHAVERIM MANASSAS HAMFEST		DEPT OF STATE AMRAD BOWIE		PG WIRELESS JOHNS HOPKINS FREE STATE ANTIETAM		BALTIMORE MONTGOMERY		ANNE ARUNDEL NAVAL RESEARCH		MARYLAND MOB SHENANDOAH			
9		10		11		12		13		14		15	
		PVRG		FREDERICK		FOUNDATION LAUREL		MOUNT VERNON NORTHERN VA PENTAGON		ALEXANDRIA VIENNA SOUTHERN MD			
16		17		18		19		20		21		22	
		OLE VA HAMS		ARLINGTON FREE STATE WOODBRIE		GODDARD MONTGOMERY		ANNE ARUNDEL BRATS		SHENANDOAH ROCK CREEK			
23		24		25		26		27		28		29	
										VIENNA			
30		1		2		3		4		5		6	
7 DAY ADVENTIST		JULY DEPT OF STATE AMRAD BOWIE		PG WIRELESS JOHNS HOPKINS FREE STATE ANTIETAM		BALTIMORE MONTGOMERY		ANNE ARUNDEL NAVAL RESEARCH		MARYLAND MOB SHENANDOAH			

INCLUDE YOUR CLUB AND ITS ACTIVITIES
ON THE AUTO-CALL CALENDAR. NOTIFY
AUTO-CALL ASAP ON MEETING DATES,
SPECIAL EVENTS, HAMFESTS AND CHANGES

GAITHERSBURG FAR HAMFEST September 8, 1985

auto-call

121 S. Highland St.
Arlington, VA 22204

Nonprofit Organization
U.S. Postage Paid
Arlington, VA 22210
Permit 757